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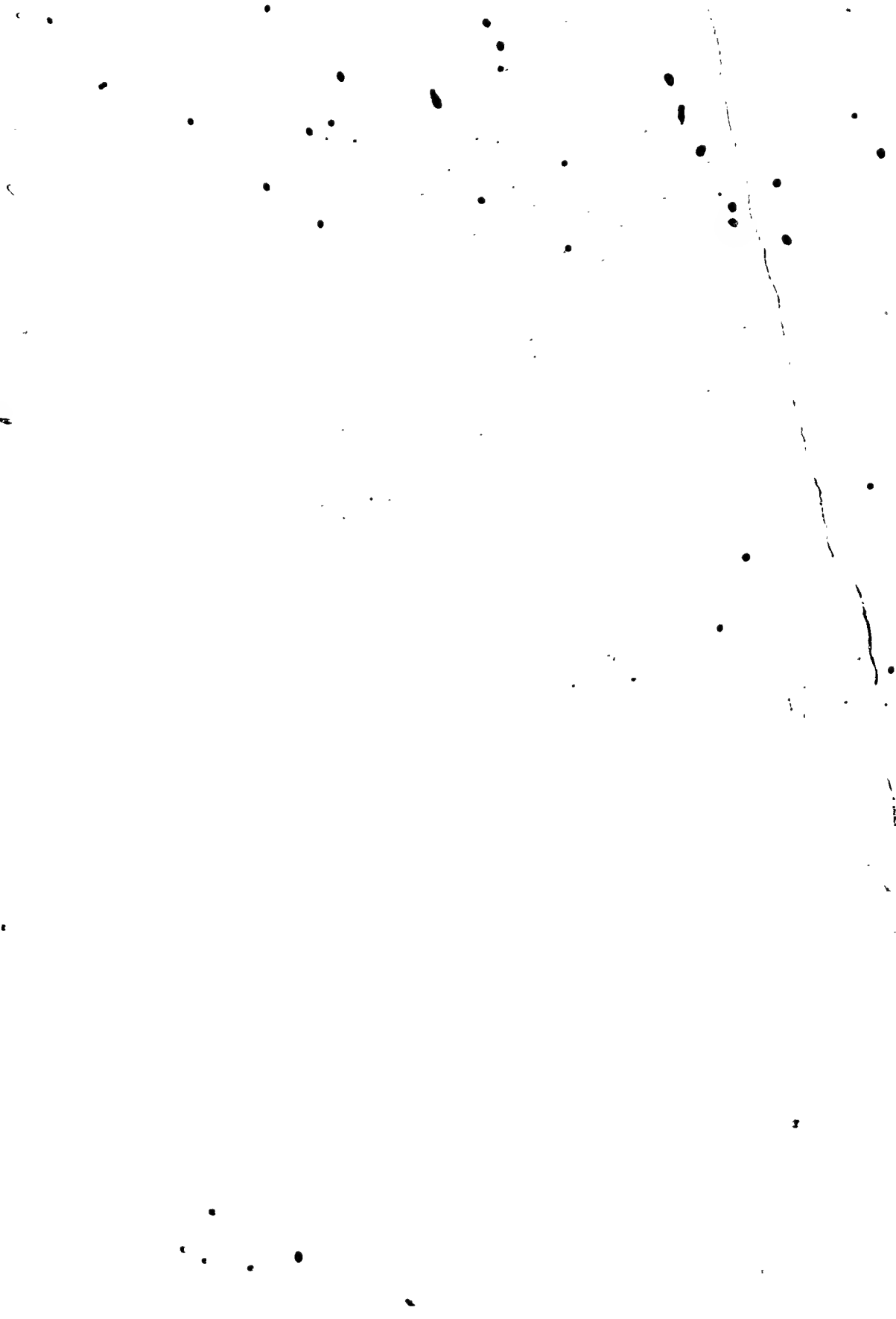






• PROCEEDINGS
• OF THE
• Society of Antiquaries of Scotland





PROCEEDINGS

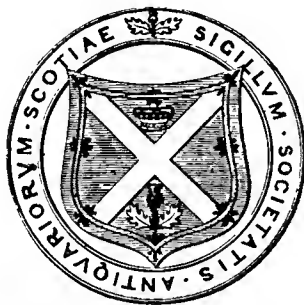
OF THE

Society of Antiquaries of Scotland

SESSION

MDCCCCXV.—MDCCCCXVI.

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VOL. L.

FIFTH SERIES.—VOL. II.

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MDCCCCXVI.

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L A W S

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND.

INSTITUTED NOVEMBER 1780 AND INCORPORATED BY
ROYAL CHARTER 6TH MAY 1783.

(Revised and adopted November 30, 1901.)

1. The purpose of the Society shall be the promotion of ARCHÆOLOGY, especially as connected with the investigation of the ANTIQUITIES AND HISTORY OF SCOTLAND.

2. The Society shall consist of Fellows, Honorary Fellows, Corresponding Members, and Lady Associates.

3. Candidates for admission as Fellows must sign the Form of Application prescribed by the Council, and must be proposed by a Fellow and seconded by two members of the Council. Admission shall be by ballot.

4. The Secretaries shall cause the names of the Candidates and of their Proposers to be inserted in the billet calling the Meeting at which they are to be balloted for. The Ballot may be taken for all the Candidates named in the billet at once; but if three or more black balls appear, the Chairman of the Meeting shall cause the Candidates to be balloted for singly. Any Candidate receiving less than two-thirds of the votes given shall not be admitted.

5. Honorary Fellows shall consist of persons eminent in Archæology, who must be recommended by the Council, and balloted for in the same way as Fellows; and they shall not be liable for any fees of admission or annual subscriptions. The number of Honorary Fellows shall not exceed twenty-five.

6. Corresponding Members must be recommended by the Council and balloted for in the same way as Fellows, and they shall not be liable for any fees of admission or annual subscriptions.

7. Ladies who have done valuable work in the field of Archæology may be admitted as Lady Associates. The number of Lady Associates shall not exceed twenty-five. They shall be proposed by the Council and balloted for in the same way as Fellows, and shall not be liable for any fees of admission or annual subscriptions.

8. Before the name of any person is added to the List of Fellows, such person shall pay to the funds of the Society Two Guineas as an entrance fee and One Guinea for the current year's subscription, or may compound for the entrance fee and all annual subscriptions by the payment of Twenty Guineas at the time of admission. Fellows may compound for future annual subscriptions by a single payment of Fifteen Guineas after having paid five annual subscriptions; or of Ten Guineas after having paid ten annual subscriptions.

9. The subscription of One Guinea shall become due on the 30th November in each year for the year then commencing; and if any Fellow who has not compounded shall fail to pay the subscription for three successive years, due application having been made for payment, the Treasurer shall report the same to the Council, by whose authority the name of the defaulter may be erased from the list of Fellows.

10. Every Fellow not being in arrears of the annual subscription shall be entitled to receive the printed Proceedings of the Society from the date of election.

11. None but Fellows shall vote or hold any office in the Society.

12. Subject to the Laws and to the control of the Society in General Meetings, the affairs of the Society shall be managed by a Council elected and appointed as hereinafter set forth. Five Members of the Council shall be a quorum.

13. The Office-Bearers of the Society shall consist of a President, three Vice-Presidents, two Secretaries for general purposes, two Secretaries for Foreign Correspondence, a Treasurer, two Curators of the Museum, a Curator of Coins, and a Librarian. The President shall be elected for a period of five years, and the Vice-Presidents for a period of three years.

One of the Vice-Presidents shall retire annually by rotation and shall not again be eligible for the same office until after the lapse of one year. All the other Office-Bearers shall be elected for one year and shall be eligible for re-election.

14. In accordance with the agreement subsisting between the Society and the Government, the Board of Manufactures (now the Board of Trustees) shall be represented on the Council by two of its Members (being Fellows of the Society) elected annually by the Society. The Treasury shall be represented on the Council by the King's and Lord Treasurer's Remembrancer (being a Fellow of the Society).

15. The Council shall consist of the Office-Bearers, the three representative Members above specified, and nine Fellows, elected by the Society.

16. Three of the nine elected Members of Council shall retire annually by rotation, and shall not again be eligible till after the lapse of one year. Vacancies among the elected Members of Council and Office-Bearers occurring by completion of term of office, by retirement on rotation, by resignation, by death or otherwise, shall be filled by election at the Annual General Meeting. The election shall be by Ballot, upon a list issued by the Council for that purpose to the Fellows at least fourteen days before the Meeting.

17. The Council may appoint committees or individuals to take charge of particular departments of the Society's business.

18. The Annual General Meeting of the Society shall take place on St Andrew's Day, the 30th of November, or on the following day if the 30th be a Sunday.

19. The Council shall have power to call Extraordinary General Meetings when they see cause.

20. The Ordinary Meetings of the Society shall be held on the second Monday of each month, from December to May inclusive.

21. Every proposal for altering the Laws must be made through the Council ; and the Secretaries, on instructions from the Council, shall cause intimation thereof to be made to all the Fellows at least one month before the General Meeting at which it is to be determined on.

FORMS OF BEQUEST.

Form of Special Bequest.

I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, my collection of . . . , and I direct that the same shall be delivered to the said Society on the receipt of the Secretary or Treasurer thereof.

General Form of Bequest.

I, A. B., do hereby leave and bequeath to the Society of Antiquaries of Scotland incorporated by Royal Charter, the sum of £ . . . sterling [*to be used for the general purposes of the Society*] [or, *to be used for the special purpose or object, of* . . .], and I direct that the said sum may be paid to the said Society on the receipt of the Treasurer for the time being.

LIST OF THE FELLOWS

OF THE

SOCIETY OF ANTIQUARIES OF SCOTLAND,

NOVEMBER 30, 1916.

PATRON :
HIS MAJESTY THE KING.

- | | |
|--|---|
| <p>1879. ABERCROMBY, The Hon. JOHN, LL.D., 62 Palmerston Place,—<i>President</i>.</p> <p>1896.*ADAM, FRANK, c/o The Straits Trading Co., Ltd., 11 Collyer Quay, Singapore.</p> <p>1899. AGNEW, Sir ANDREW N., Bart., Lochnaw Castle, Stranraer.</p> <p>1892. AILSA, The Most Hon. The Marquess of, Culzean Castle, Maybole.</p> <p>1906. AITKEN, JOHN, LL.D., F.R.S., Ardenlea, Falkirk.</p> <p>1905. ALEXANDER, R. S., Grant Lodge, 18 Lomond Road, Trinity.</p> <p>1909. ALISON, JAMES PEARSON, F.R.I.B.A., Ladylaw, Hawick.</p> <p>1908. ALLINGHAM, HUGH, M.R.I.A., The Mall, Ballyshannon, Co. Donegal, Ireland.</p> <p>1907. ANDERSON, JAMES LAWSON, 45 Northumberland Street.</p> <p>1897. ANDERSON, Major JOHN HAMILTON, 2nd East Lancashire Regiment, c/o Messrs Cox & Co., 16 Charing Cross, London.</p> <p>1911. ANDERSON, JOHN N., J.P., Solicitor, Stornoway.</p> <p>1902.*ANDERSON, Major ROBERT DOUGLAS, c/o The Manager, Lloyd's Bank, Paignton, Devon.</p> <p>1871.*ANDERSON, Sir ROBERT ROWAND, LL.D., H.R.S.A., Architect, 16 Rutland Square.</p> <p>1887.*ANDERSON-BERRY, DAVID, M.D., LL.D., F.R.S.E., Versailles, 19 Stanhope Road, Highgate, London, N.</p> <p>1913. ANGUS, Miss MARY, Immeriach, Blackness Road, Dundee.</p> <p>1894. ANGUS, ROBERT, Ladykirk, Monkton, Ayrshire.</p> | <p>1910. ANNAN, J. CRAIG, Glenbank, Lenzie.</p> <p>1900. ANSTRUTHER, Sir RALPH W., Bart., Balcaskie, Pittenweem.</p> <p>1897. ANSTRUTHER-GRAY, WILLIAM, M.P., Major, Royal Horse Guards, Kilmany, Fife.</p> <p>1914. ARMITAGE, Captain HARRY, late 15th Hussars, The Grange, North Berwick.</p> <p>1910. ARMSTRONG, A. LESLIE, 14 Swaledale Road, Millhouses, Sheffield.</p> <p>1912. ARMSTRONG, CLEMENT, Eskholm, Langholm.</p> <p>1901. ARTHUR, ALEXANDER THOMSON, M.B., C.M., Blair Devenick, Cults, Aberdeen.</p> <p>1904. ARTHUR, Sir MATTHEW, Bart., Carlung, Fullarton, Troon.</p> <p>1910. ASHER, JOHN, 1 Muirhall Terrace, Perth.</p> <p>1889. ATHOLL, His Grace The Duke of, K.T., Blair Castle, Blair Atholl.</p> <p>1915. BAIN, GEORGE, Rosebank, Nairn.</p> <p>1900.*BAIRD, JOHN G. ALEXANDER, Wellwood, Muirkirk, Ayrshire.</p> <p>1891. BAIRD, WILLIAM, J.P., Clydesdale Bank, Portobello.</p> <p>1913. BAIRD, WILLIAM A., Lennoxlove, Haddington.</p> <p>1883. BALFOUR, CHARLES BARRINGTON, Newton Don, Kelso.</p> <p>1915. BALLANTINE, JAMES, Goodtrees, Murrayfield.</p> <p>1890. BANNERMAN, WILLIAM, M.A., M.D., West Park, 30 Polwarth Terrace.</p> <p>1897. BARCLAY-ALLARDICE, ROBERT, M.A., Rosehill, Lostwithiel, Cornwall.</p> <p>1897. BARNETT, Rev. T. R., 7 Corrennie Gardens.</p> |
|--|---|

An asterisk (*) denotes Life Members who have compounded for their Annual Contributions.

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- 1904.*BONTEIN, JAMES SHELLEY, J.P., Glencruitten, Oban.
1905. BOOKER, ROBERT P. LEE, Eton College, Windsor.
- 1903.*BORTHWICK, HENRY, c/o W. H. Borthwick, Esq., 46 George Square.
1893. BOYLE, COLONEL THE HON. ROBERT E., 95 Onslow Square, London.
1884. BOYNTON, THOMAS, Norman House, Bridlington.
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1890. LINDSAY, LEONARD C., Broomhills, Honiton, Devon.
1892. LINTON, SIMON, Oakwood, Selkirk.
- 1881.*LITTLE, ROBERT, Ardenlea, Northwood, Middlesex.
1915. LOCKHART, JOHN Y., 12 Victoria Gardens, Kirkcaldy.
1904. LOCKHART, Sir SIMON MACDONALD, Bart., of Lee and Carnwath, The Lee, Lanark.
- 1901.*LONEY, JOHN W. M., 8 Carlton Street.
1882. LORIMER, GEORGE, Durisdeer, Gillsland Road.
1902. LOW, GEORGE M., Actuary, 11 Moray Place.
1904. LOWSON, GEORGE, LL.D., Rector of the High School, 14 Park Place, Stirling.
1905. LUSK, Rev. DAVID COLVILLE, 15 The Turl, Oxford.
1915. LYELL, JAMES RONALDSON, Bantuscal, 30 Blacket Place.
1915. LYON, Rev. W. T., Christ Church Rectory, Lanark.
1910. LYONS, ANDREW W., 44 India Street.
1892. MACADAM, JOSEPH H., 38 Shoe Lane, London.
1914. MACCALLUM, Rev. DONALD, Minister of Lochn, Manse of Lochs, Lewis.
1908. M'CONACHIE, Rev. WILLIAM, The Manse, Lauder.
1915. M'CORMICK, ANDREW, 66 Victoria Street, Newton-Stewart.
1889. M'CONACHIE, Rev. FREDERICK H. J., Wrockwardine Wood Rectory, Wellington, Salop.
1913. M'CORMICK, Sir WILLIAM S., LL.D., 13 Douglas Crescent.
1904. MACDONALD, CHARLES, Dunglass Castle, Bowling.
1885. MACDONALD, COLL REGINALD, M.D., St Lawrence Ayr.
- 1900.*MACDONALD, GEORGE, C.B., F.B.A., M.A., LL.D., 17 Learmonth Gardens,—*Curator of Coins*.
1879. MACDONALD, JAMES, W.S., 21 Thistle Street.
1908. MACDONALD, JAMES, J.P., Dellifour House, Kingussie.
1909. MACDONALD, JOHN, Sutherland Arms Hotel, Golspie.
- 1890.*MACDONALD, JOHN MATHESON, Moor Hill, Farnham, Surrey.
1882. MACDONALD, KENNETH, Town Clerk of Inverness.
1890. MACDONALD, WILLIAM RAE, Neidpath, Wester Coates Avenue.
1896. MACDOUGALL, Sir JAMES PATTEN, K.C.B., Keeper of the Records of Scotland and Registrar-General, of Gallanach, Oban, 39 Heriot Row.

- 1872.*M'DOWALL, THOMAS W., M.D., East Cottingwood, Morpeth.
1908. M'ELNEY, Rev. ROBERT, M.A., The Manse, Downpatrick, County Down.
1911. M'EWEN, HUGH DRUMMOND, Lyndhurst, Primrose Bank Road, Trinity.
1892. M'EWEN, Rev. JOHN, Dyke, Forbes.
1903. M'EWEN, W. C., M.A., W.S., 9 South Charlotte Street.
1899. MACFARLANE-GRIEVE, W. A., M.A., and S.C.L. Oxon., M.A. Cantab., of Penchrise and Edenhall, Roxburghshire, Impington Park, Cambridge-shire.
1902. M'GILCHRIST, CHARLES R. B., J.P., 28 Penkett Road, Liscard, Cheshire.
- 1898.*MACGILLIVRAY, ANGUS, C.M., M.D., 23 South Tay Street, Dundee.
1878. MACGILLIVRAY, WILLIAM, W.S., 32 Charlotte Square.
- 1901.*MACGREGOR, ALASDAIR R., of Macgregor, The Hermitage, Rothesay, Isle of Bute.
1869. M'HARDY, Lt.-Col. Sir ALEXANDER BURNES, K.C.B., 3 Ravelston Park.
1898. MACINTOSH, Rev. CHARLES DOUGLAS, M.A., Minister of St Oran's Church, Tigh-na-creige, Connel, Argyllshire.
- 1897.*MACINTYRE, P. M., Advocate, Auchengower, Brackland Road, Callander.
1908. MACKAY, GEORGE, M.D., F.R.C.S.E., 20 Drum-sheugh Gardens.
1903. MACKAY, GEORGE G., Melness, Hoylake, Cheshire.
1888. MACKAY, J. F., W.S., Whitehouse, Cramond Bridge, Midlothian.
1912. MACKAY, NORMAN DOUGLAS, M.D., B.Sc., D.P.H., Dall-Avon, Aberfeldy.
1882. MACKAY, WILLIAM, LL.D., Solicitor, Inverness.
1909. MACKEAN, NORMAN M., Parkgate, Paisley.
1909. MACKECHNIE, JOHN MACLELLAN, Solicitor, 141 St Vincent Street, Glasgow.
1911. MACKENZIE, ALEXANDER J., Solicitor, 62 Academy Street, Inverness.
1887. MACKENZIE, DAVID J., Sheriff-Substitute, 17 Athole Gardens, Glasgow, W.
- 1891.*MACKENZIE, JAMES, 2 Rillbank Crescent.
- 1872.*MACKENZIE, Rev. JAMES B., 6 Woodburn Terrace.
1911. MACKENZIE, JOHN, Dunvegan House, Dunvegan, Skye.
1900. MACKENZIE, Sir KENNETH J., Bart., King's and Lord Treasurer's Remembrancer, 10 Moray Place.
1910. MACKENZIE, MURDO TOLME, M.B., Scolpaig, Lochmaddy.
1882. MACKENZIE, R. W. R., Earlsall, Leuchars, Fife.
1904. MACKENZIE, WILLIAM COOK, 38 Mount Ararat Road, Richmond-on-Thames.
1904. MACKENZIE, W. M., M.A., Ellerker House, 63 Onslow Road, Richmond, Surrey.
- 1911.*MACKIE, PETER JEFFREY, of Glenreadell, and Corraith, Symington, Ayrshire.
1913. MACKINTOSH, H. B., Redhythe, Elgin.
1893. MACKINTOSH, WILLIAM FYFE, 33 Magdalen Yard Road, Dundee.
1915. MACKIRDY, Captain ELLIOT M. S., M.A. Oxon., Lanarkshire Yeomanry, Birkwood Castle, Lesmahagow, Lanarkshire.
1878. MACLAGAN, ROBERT CRAIG, M.D., 5 Coates Crescent.
- 1885.*MACLEHOSE, JAMES, M.A., LL.D., F.S.A., 7 University Gardens, Glasgow.
1910. MACLEOD, FREDERICK THOMAS, 36 St Alban's Road.
- 1890.*MACLEOD, Sir REGINALD, K.C.B., Vinters, Maidstone, Kent.
1902. MACLEOD, ROBERT *CRAWFURD, 19 Scotland Street.
1907. MACLEOD, Rev. WILLIAM H., B.A. Cantab. Manse of Buchanan, Drymen.
1875. MACMATH, WILLIAM, 16 St Andrew Square.
1905. MACMILLAN, H. P., K.C., 32 Moray Place.
1915. MACNEIL, ROBERT LISTER, of Barra, The Wyoming, Washington, D.C., U.S.A.
1909. MACPHAIL, J. R. N., K.C., 17 Royal Circus.
1886. MACPHERSON, ARCHIBALD, Architect, 7 Young Street.
1909. MACRAE, Capt. COLIN, of Feoirinn, Colintrave, Argyll.
1908. MACRAE, Rev. DONALD, B.D., The Manse, Edderton, Ross-shire.
1914. MACRAE-GILSTRAP, Lieutenant-Colonel JOHN, of Eilean Donan, Ballimore, Otter Ferry Argyll.
- 1882.*MACRITCHIE, DAVID, C.A., 4 Archibald Place.
1909. MALCOLM, JOHN, 5 Durham Gardens, Monifieth, Forfarshire.
1896. MALLOCH, JAMES, M.A., Dudhope Villa, Dundee.
1914. MALLOCH, JAMES J., M.A., Wakefield, Juniper Green.
1901. MANN, LUDOVIC M'LELLAN, 144 St Vincent Street, Glasgow.
1915. MANUEL, Rev. D. G., Manse of Mertoun, St Boswells.
1906. MARSHALL, HENRY B., Rachan, Broughton, Peeblesshire.
1885. MARSHALL, WILLIAM HUNTER, Callander, Perthshire.

1915. MARTIN, JAMES H., Hollybank, Panmure Terrace, Dundee.
1909. MARTIN, REV. JOHN, Inverleith Terrace.
1916. MARTIN, WILLIAM, J.P., 24 Athole Gardens, Kelvinside, Glasgow.
1908. MASTIN, JOHN, M.A., D.Sc., Ph.D., Litt.D., LL.D., etc., Principal of Kenyon Hall College, Kenyon.
1884. MAXWELL, The Right Hon. Sir HERBERT EUSTACE, Bart., D.C.L., LL.D., F.S.A., of Monreith, Wigtownshire.
- 1892.*MAXWELL, SIR JOHN STIRLING, Bart., LL.D., Pollok House, Pollokshaws.
1904. MAY, THOMAS, F.E.I.S., F.S.A., Glenearn, Perth Road, Crieff.
1900. MENZIES, W. D. GRAHAM, of Pitcair, Hallyburton House, Coupar-Angus.
1878. MERCER, Major WILLIAM LINDSAY, Huntingtower, Perth.
1914. MIDDLEMISS, Rev. J. T., 3 The Beeches, West Didsbury, Manchester.
1882. MILLAR, ALEXANDER H., LL.D., Rosslynn House, Clepington Road, Dundee.
1896. MILLER, ALEXANDER C., M.D., Craig Linnhe, Fort-William.
- 1878.*MILLER, GEORGE ANDERSON, W.S., Knowehead, Perth.
1904. MILLER, JOHN CHARLES, North of Scotland and Town and County Bank, 67 St Vincent Street, Glasgow.
- 1907.*MILLER, ROBERT SCHAW, W.S., 14 Rosebery Crescent.
1911. MILLER, STEUART NAPIER, Lecturer in Roman History, The University, Glasgow.
1884. MITCHELL, HUGH, Solicitor, Pitlochry.
- 1890.*MITCHELL, SYDNEY, Architect, The Pleasance, Gullane.
- 1882.*MITCHELL-THOMSON, Sir MITCHELL, Bart., Caledonian Railway Hotel, Edinburgh.
1907. MOFFATT, ALEXANDER, M.A., LL.B., Advocate, Sheriff-Substitute of Stirlingshire, Arnotdale, Falkirk.
1908. MONTGOMERIE, JOHN CUNNINGHAM, of Dalmore, Stair, Ayrshire.
1895. MORAY, The Right Hon. The Earl of, Kinfauns Castle, Perth.
1882. MORRIS, JAMES ARCHIBALD, Architect, Wellington Chambers, Ayr.
1907. MORRIS, JOSEPH, Fern Bank, Clermiston Road, Corstorphine.
1882. MORRISON, HEW, LL.D., Librarian, Edinburgh Public Library, Torrisdale, 3 Corrennie Gardens.
- 1887.*MOUBRAY, JOHN J., Naemoor, Rumbling Bridge.
1904. MOUNSEY, J. L., W.S., Professor of Conveyancing, University of Edinburgh, 24 Glencairn Crescent.
1897. MOXON, CHARLES, 77 George Street.
1889. MUIRHEAD, GEORGE, F.R.S.E., Commissioner for the Duke of Richmond and Gordon, Speybank, Fochabers.
- 1879.*MUNRO, ROBERT, M.A., M.D., LL.D., Elmbank, Largs, Ayrshire.
- 1890.*MUNRO, Rev. W. M., New Park, St. Andrews.
1899. MUNRO-FERGUSON, His Excellency The Right Hon. Sir RONALD CRAUFURD, of Novar, G.C.M.G., Raith, Kirkcaldy.
1911. MURCHIE, JAMES, Penrioch, Kingcase, Prestwick, Ayrshire.
1910. MURRAY, CHARLES HOPE, jun., Stockbroker, 98 West George Street, Glasgow.
- 1878.*MURRAY, DAVID, M.A., LL.D., F.S.A., 169 West George Street, Glasgow.
1911. MURRAY, KEITH R., B.A., 27 St Leonard's Terrace, Chelsea, London.
1884. MURRAY, PATRICK, W.S., 7 Eton Terrace.
1905. MURRAY, P. KEITH, W.S., 1 Douglas Gardens.
- 1905.*NAISMITH, WILLIAM W., C.A., 57 Hamilton Drive, Glasgow.
- 1911.*NAPIER, GEORGE G., M.A., 9 Woodside Place, Glasgow.
1907. NAPIER, HENRY M., Milton House, Bowling.
1896. NAPIER, THEODORE, c/o Mrs Farquharson, 10 Melville Crescent.
- 1891.*NEILSON, GEORGE, LL.D., Wellfield, 76 Partickhill Road, Glasgow.—*Vice-President*.
1906. NELSON, THOMAS A., St Leonard's, Dalkeith Road.
1900. NEWLANDS, The Right Hon. Lord, LL.D., Mauldshe Castle Carlisle.
1887. NEWTON, R. N. H., 3 Eglinton Crescent.
1907. NICOLSON, DAVID, C.B., M.D., 201 Royal Courts of Justice, Strand, London.
- 1877.*NIVEN, ALEXANDER T. C.A., 28 Fountainhall Road.
1891. NOBLE, ROBERT, Heronhill, Hawick.
1905. NORRIE, JAMES A., Craigtay, Ferry Road, Dundee.
1898. NOTMAN, JOHN, F.F.A., 176 Newhaven Road,—*Treasurer*.
1910. OGILVY, Mrs M. G. C. NISBET-HAMILTON, of Belhaven, Dirleton, and Winton, Biel House Prestonkirk.
- 1907.*OKE, ALFRED WILLIAM, B.A., F.L.S., 32 Denmark Villas, Hove, Sussex.

1904. OLDRIEVE, W. T., F.R.I.B.A., 13 Braid Avenue.
1896. ORMOND, REV. DAVID D., Minister Emeritus of Craigs U.F. Church, 7 Dean Crescent, Stirling.
1907. ORR, JOHN M'KIRDY, 32 Dockhead Street, Saltcoats.
1908. ORROCK, ALEXANDER, 16 Dairymple Crescent.
1901. OWER, CHARLES, Architect, Benora, Broughtly Ferry.
1903. PARK, ALEXANDER, Ingleside, Lenzie.
1915. PATERSON, JOHN WILSON, A.R.I.B.A., Ancient Monuments Department, H.M. Office of Works, 3 Hope Park Terrace.
1906. PATERSON, MISS OCTAVIA G., Ashmore, Helensburgh.
1891. PATON, VICTOR ALBERT NOEL, W.S., 31 Melville Street.
1880. PATTERSON, JAMES K., Ph.D., LL.D., President Emeritus, State University of Kentucky, Lexington, Kentucky, U.S.A.
1914. PATTERSON, T. BAXENDALE, LL.D.S., Carisbrooke, 84 Station Road, Blackpool.
1900. PAUL, ARTHUR F. BALFOUR, Architect, 16 Rutland Square.
- 1871.*PAUL, Sir GEORGE M., LL.D., W.S., Deputy Keeper of the Signet, 16 St Andrew Square.
1879. PAUL, Sir J. BALFOUR, C.V.O., LL.D., Lord Lyon King-of-Arms, 30 Heriot Row.
1913. PAUL, J. N. WILFRED, B.A., M.R.E.I.S. (no address).
- 1902.*PAULIN, Sir DAVID, F.F.A., 6 Forres Street.
1891. PEACE, THOMAS SMITH, Architect, Junction Road, Kirkwall.
1913. PEACOCK, A. WEBSTER, Architect, 140 Princes Street.
1904. PEDDIE, ALEXANDER L. DICK, W.S., 13 South Learmonth Gardens.
1879. PEDDIE, JOHN M. DICK, Architect, 8 Albany Place.
1916. PHILIP, ALEXANDER, LL.B., F.R.S.E., The Mary Acre, Brechin.
1912. PORTEOUS, ALEXANDER, Ancaster House, St Fillans, Perthshire.
- 1901.*PORTLAND, His Grace The Duke of, K.G., Welbeck Abbey, Notts.
1911. PRESTON, FRANK A. B., Architect, Ardwell, 16 Waverley Park, Shawlands, Glasgow.
1905. PRICE, C. REES, Walnuts, Broadway, Worcester-shire.
1900. PRIMROSE, Rev. JAMES, M.A., 58 West Princes Street, Glasgow.
1906. PRINGLE, ROBERT, 11 Barnton Gardens, Davidson's Mains.
1907. PULLAR, HERBERT, Dunbarnie Cottage, Bridge of Earn.
1912. QUICK, RICHARD, Superintendent of Art Gallery and Antiquities, Bristol Museum, Queen's Road, Bristol.
1906. RAIT, ROBERT SANGSTER, 31 Lilybank Gardens, Glasgow.
1891. RAMSAY, WILLIAM, Bowland, Stow.
1908. RANKIN, WILLIAM BLACK, of Cleddans, 9 Lansdowne Crescent.
1879. RANKINE, JOHN, K.C., M.A., LL.D., Professor of Scots Law, University of Edinburgh, 23 Ainslie Place.
1913. RATTRAY, GEORGE D., 7 Springfield, Dundee.
1906. RAVEN, ALEXANDER JAMES, c/o The Capital and Counties Bank, Corshill, Ipswich.
1899. REA, ALEXANDER, Havalahalli Estate, c/o Postmaster, Yelahanka, Bangalore, Mysore State, India.
1901. REID, ALAN, F.E.I.S., The Loaning, Merchiston Bank Gardens.
1909. REID, ALPHONSQ STODART, Bank of England, Manchester.
- 1897.*REID, Rev. EDWARD T. S., M.A., Ravelston, 994 Great Western Road, Glasgow.
1912. RICHARDSON, JAMES S., Architect, 4 Melville Street.
1896. RICHARDSON, RALPH, W.S., 29 Eglinton Crescent.
- 1886.*RITCHIE, CHARLES, S.S.C., 20 Hill Street.
1907. ROBB, JAMES, LL.B., 7 Alvanley Terrace.
- 1898.*ROBERTS, ALEXANDER F., Fairnilee, Selkirk.
1905. ROBERTS, JOHN, C.M.G., Littlebourne House, Dunedin, New Zealand.
1914. ROBERTS, J. HUBERT, F.R.G.S., F.S.I., Bryntirion, Eaton Grove, Swansea.
- 1901.*ROBERTS, THOMAS J. S., Drygrange, Melrose.
1916. ROBERTSON, ALAN KEITH, Architect, 12 Russell Place, Leith.
1910. ROBERTSON, JOHN, 27 Victoria Road, Dundee.
1913. ROBERTSON, JOHN CHARLES (no address).
- 1886.*ROBERTSON, ROBERT, Huntly House, Dollar.
1915. ROBERTSON, ROBERT BURNS, Resident Architect, H.M. Office of Works, Windsor Castle, Windsor.
1905. ROBERTSON, W. G. ARCHISON, M.D., D.Sc., F.R.C.P.E., Mayfield Lodge, 2 Mayfield Gardens.
1914. ROBISON, JOSEPH, 14 Castle Street, Kirkcudbright.
- 1916.*RODGER, EDWARD, 1 Clairmont Gardens, Glasgow.

1905. ROLLO, JAMES A., Solicitor, Argyle House, Maryfield, Dundee.
1910. ROMANES, CHARLES S., C.A., 3 Ahhotsford Crescent.
- 1872.*ROSEBERRY AND MIDLOTHIAN, The Right Hon. The Earl of, K.G., K.T., D.C.L., LL.D., Dalmeny Park.
1876. ROSS, ALEXANDER, LL.D., Architect, Queensgate Chambers, Inverness.
1891. ROSS, THOMAS, LL.D., Architect, 14 Saxe-Coburg Place.
1915. RUSK, J. M., S.S.C., Clinton House, Whitehouse Loan.
1906. RUSSELL, Rev. JAMES C., D.D., 9 Coates Gardens.
1914. RUSSELL, JOHN, 323 Leith Walk.
1911. SAMUEL, JOHN SMITH, 8 Park Avenue, Glasgow, W.
1907. SANDEMAN, DAVID D., Cairniebank House, Arbroath.
- 1903.*SAYCE, Rev. A. H., M.A., LL.D., D.D., Professor of Assyriology, Oxford, 8 Chalmers Crescent, Edinburgh,—*Foreign Secretary*.
1912. SCLATER, Rev. HENRY GUY, Bowmore, Islay.
1910. SCOBIE, Captain IAN H. MACKAY, of the 1st Essex Regiment, c/o Messrs Cox & Co., Charing Cross, London, S.W.
1892. SCOTT, Sir JAMES, J.P., Rock Knowe, Tayport.
1903. SCOTT, JOHN, W.S., 13 Hill Street.
1901. SCOTT, J. H. F. KINNAIRD, of Gala, Gala House, Galashiels.
1907. SCOTT, THOMAS G., 186 Ferry Road.
1898. SCOTT-HALL, The Right Rev. Bishop W. E., Bishop's House, Oxford.
1893. SCOTT-MONCRIEFF, DAVID, W.S., 24 George Square.
1907. SCOTT-MONCRIEFF, ROBERT, W.S., 10 Randolph Cliff,—*Secretary*.
1889. SCOTT-MONCRIEFF, W.G., M.A., Sheriff-Substitute of Lanarkshire, Edgemoor, Lanark.
1915. SCRYMGEOUR, NORVAL, Fellow of the Institute of Journalists, Helen Bank, Longforgan, by Dundee.
1913. SHAND, J. HARVEY, W.S., 38 Northumberland Street.
1908. SHEARER, JOHN E., 6 King Street, Stirling.
1892. SHIELDS, HENRY, K., C.A., 141 George Street.
1913. SIM, Rev. GUSTAVUS AIRD, Valetta, Malta.
1915. SIMPSON, C. J. W., Principal Architect H.M. Office of Works, Edinburgh, 51 Cluny Drive.
- 1880.*SIMPSON, ROBERT R., W.S., 23 Douglas Crescent.
1908. SINCLAIR, COLIN, M.A., Architect, 35 Clifford Street, Ibrox, Glasgow.
1916. SINCLAIR, SPEIRS PATON, C.A., 25 Grosvenor Street.
1910. SINTON, Rev. THOMAS, D.D., Minister of Dores, Inverness-shire.
1907. SKERRINGTON, The Hon. Lord, 12 Randolph Crescent.
1909. SKINNER, ROBERT TAYLOR, M.A., F.R.S.E., House Governor, Donaldson's Hospital.
1902. SMITH, A. DUNCAN, Advocate, Rosehill, Banchory-Ternan.
1910. SMITH, DAVID BAIRD, LL.B., 6 Woodlands Terrace, Glasgow.
1898. SMITH, DAVID CRAWFORD, Croft Lodge, Craigie, Perth.
1892. SMITH, G. GREGORY, LL.D., Professor of English Literature, University of Belfast, 26 Windsor Park, Belfast.
1915. SMITH, JAMES, Conservator, Anthropological Museum, Marischal College, Aberdeen, 4 Belmont Place, Aberdeen.
1889. SMITH, ROBERT, Solicitor, 9 Ward Road, Dundee.
- 1892.*SMYTHE, Colonel DAVID M., Methven Castle, Perth.
1892. SOMERVILLE, Rev. J. E., D.B., Castellar, Crieff.
- 1910.*SPENCER, CHARLES LOUIS, 5 Great Western Terrace, Glasgow.
- 1910.*SPENCER, JOHN JAMES, 5 Great Western Terrace, Glasgow.
1913. SQUANCE, THOMAS COKE, M.D., 15 Grange Crescent, Sunderland.
- 1903.*STARK, Rev. WILLIAM A., 68 Lauderdale Gardens, Hyndland, Glasgow.
1904. STEEL, Rev. JAMES, D.D., Vicar of Heworth, Gateshead, Newcastle-on-Tyne.
1891. STEELE, WILLIAM, Inland Revenue, Marlborough Cottage, Kelso.
1901. STEUART, A. FRANCIS, Advocate, 79 Great King Street.
1902. STEUART, JAMES, W.S., 25 Rutland Street.
1912. STEVENSON, DAVID, Firenze, 93 Trinity Road.
1895. STEVENSON, JOHN HORNE, M.A., Advocate, 9 Oxford Terrace.
1913. STEVENSON, NORMAN, Dechmont View, Sandyhills, Shettleston.
1913. STEVENSON, PERCY R., 5 North Charlotte Street.
1904. STEVENSON, Major-General T. R., C.B., Sunnyside, Lanark.
1911. STEWART, A. K., 4 Midmar Avenue.
1916. STEWART, CHARLES, W.S., 28 Coates Gardens.
1879. STEWART, CHARLES POYNTZ, Chesfield Park, Stevenage.

1901. STEWART, Sir HUGH SHAW, Bart., Ardgowan, Greenock.
1901. STEWART, Sir MARK J. M'TAGGART, Bart., Ardwell, Stranraer.
1913. STEWART, R. RANNOCH, 12 Lorne Terrace, Maryhill, Glasgow.
1885. STEWART, ROBERT KING, Muredoustoun Castle, Newmains, Lanarkshire.
1914. STEWART, W. BALFOUR, Fir Grove, Park Road West, Birkenhead.
1908. STIRTON, Rev. JOHN, B.D., The Manse, Glamis, Forfarshire.
1907. STONESTREET, Rev. WILLIAM T., D.D., Arnholm, 268 Hornhy Road, Blackpool.
1889. STRATHERN, ROBERT, W.S., 13 Eglinton Crescent.
1910. STRUTHERS, Sir John, K.C.B., LL.D., 31 Sloane Gardens, London, S.W.
1904. STUART, Rev. JOHN, B.D., Kirkton Manse, Hawick.
1897. SULLY, PHILIP, Moray Street, Elgin.
1897. SUTTIE, GEORGE C., J.P., of Lalathan, Lalathan Lodge, St Cyrus, by Montrose.
1884. SWALLOW, Rev. H. J., M.A., Hawthorn Rectory, Sunderland.
1916. SWAN, T. AIKMAN, A.R.I.B.A., 12 Claremont Crescent.
1900. SWINTON, Captain GEORGE S. C., Gattonside House, Melrose.
- 1910.*SYKES, FRANK, Brookfield, Cheadle, Cheshire.
1913. SYKES, FRANK, Lorne Villa, Victoria Road, New Barnet, Herts.
1916. TAIT, EDWYN SEYMOUR REID, 82 Commercial Street, Lerwick.
1910. TAIT, GEORGE HOPE, 26 High Street, Galashiels.
1910. TERRY, Rev. GEORGE FREDERICK, F.S.A., Rector of St John's Episcopal Church, 10 Learmonth Terrace.
1902. THIN, ROBERT, M.A., M.B., C.M., 25 Abercromby Place.
1910. THOMAS, H. D., M.A., Oxon., Joint Headmaster of Cargilfield School, Cramond Bridge.
1900. THOMSON, ANDREW, Burgh School, Galashiels.
- 1906.*THOMSON, DAVID COUPER, J.P., D.L., Inveravon, Broughty Ferry.
1911. THOMSON, JAMES, M.A., LL.B., Solicitor, 1 West Bell Street, Dundee.
1913. THOMSON, JAMES, The Cedars, Fortisgreen Road, East Finchley, London, N.
1913. THOMSON, JOHN GORDON, S.S.C., 54 Castle Street.
1896. THOMSON, J. MAITLAND, LL.D., Advocate, 3 Grosvenor Gardens.
1910. THOMSON, WILLIAM N., Architect, 85 Constitution Street, Leith.
1898. THORBURN, MICHAEL GRIEVE, Glenormiston, Innerleithen.
1911. THORBURN, WILLIAM, Headmaster of the Public School, Ecclefechan, Dumfriesshire.
1907. THORP, JOHN THOMAS, LL.D., Brunswick House, 54 Princess Road, Leicester.
1910. TODD, HENRY GUICHARDE, Architect, 3 Adelaide Villas, New Barnet, Herts.
- 1902.*TRAILL, H. LIONEL NORTON, F.R.G.S., Capt. 4th Highland Light Infantry, Grattan Lodge, Vicarstown, Stradhally, Queen's County, Ireland.
1899. TULLOCH, Major-Gen. Sir ALEXANDER BRUCE, K.C.B., C.M.G., Llanwysk, Criclowell, S. Wales.
- 1887.*TURNBULL, WILLIAM J., 16 Grange Terrace.
1901. TURNBULL, W. S., Aikenshaw, Roseneath.
- 1878.*URQUHART, JAMES, N.P., Chief Assistant Keeper, General Register of Sasines, 13 Danube Street.
- 1905.*USHER, Sir ROBERT, Bart., of Norton and Wells, Wells, Hawick.
1904. WADDELL, JAMES ALEXANDER, of Leadloch, 12 Kew Terrace, Glasgow.
1909. WALKER, JOHN, M.A., Solicitor, S.Q.M.S., Lovat Scouts, Herringfleet Hall, Lowestoft (temporary address).
1879. WALLACE, THOMAS, Ellerslie, Inverness.
1915. WARD, The Venerable Archdeacon ALGERNON, M.A. Cantab., The Vicarage, Sturminster Newton, Dorset.
1916. WATERSON, DAVID, Fellow, Royal Society of Painter-Etchers, Lond., Bridgend House, Brechin.
1876. WATERSTON, GEORGE, 10 Claremont Crescent.
1904. WATLING, H. STEWARD, Architect, White Gables, Dovercourt, Essex.
- 1891.*WATSON, Rev. ALEXANDER DUFF, B.D., 433 Great Western Road, Aberdeen.
- 1907.*WATSON, CHARLES B. BOOG, F.R.S.E., Huntly Lodge, 1 Napier Road.
1913. WATSON, G. P. H., 5 Morningside Park.
1904. WATSON, JOHN, Architect, 27 Rutland Street.
1908. WATSON, JOHN PARKER, W.S., Greystane, Kinellan Road, Murrayfield.
1904. WATSON, WALTER CRUM, B.A., Oxon., Northfield, Balerno.

1912. WATSON, WILLIAM J., M.A., LL.D., F.R.S.E., Professor of Celtic Languages, Literature and Antiquities, University of Edinburgh, 8 Spence Street.
- 1907.*WATT, JAMES, W.S., F.F.A., 24 Rothesay Terrace.
1908. WATT, Rev. LAUCHLAN MACLEAN, M.A., B.D., 7 Royal Circus.
1879. WEDDERBURN, J. R. M., M.A., W.S., 3 Glencairn Crescent.
- 1884.*WHITE, CECIL, 32 Drummond Place.
1914. WHITE, GEORGE DUNCAN, of Kilrenny, 25 Market-gate, Crail.
1904. WHITE, JAMES, St Winnin's, Bearsden, Dunbartonshire.
1916. WHITE, JOHN, 18 Arthur Street, Pilrig, Leith.
1903. WHITELAW, ALEXANDER, Gartshore, Kirkintilloch.
- 1902.*WHITELAW, CHARLES EDWARD, Architect, 141 Bath Street, Glasgow.
1907. WHITELAW, HARRY VINCENT, Ryden, Kilhuacalm, Renfrewshire.
1913. WHITESIDE, Rev. JOSEPH, M.A., Helsington, Vicarage, Kendal.
1909. WHITTAKER, CHARLES RICHARD, F.R.C.S., Lynwood, 27 Hatton Place.
1913. WHITTAKER, Professor EDMUND T., M.A., Hon. Sc.D., F.R.S., 35 George Square.
1908. WILKIE, JAMES, B.L., S.S.C., 108 George Street.
1895. WILLIAMS, Rev. GEORGE, Minister of Norrieston U.F. Church, Thornhill, Perthshire.
1897. WILLIAMS, H. MALLAM, Tilehurst, 81 Priory Road, Kew, Surrey.
1908. WILSON, ANDREW ROBERTSON, M.A., M.D., of Hopewell, Aberdeenshire, Cairnmore, Rose Side Road, Liscard, Cheshire.
1913. WILSON, Rev. THOMAS, B.D., The Manse, Stow, Midlothian.
1912. WILSON, Rev. W. B. ROBERTSON, Strathdevon, Dollar.
1888. WILSON, The Very Rev. W. HAY, Dean of Moray, Dingwall.
1916. WINDUST, Mrs ESTHER, Pioneer Club, 9 Park Place, St James's, London, S.W.
1907. WOOD, WILLIAM JAMES, 266 George Street, Glasgow.
1903. WRIGHT, Rev. FREDERICK G., Hopton Wafers Rectory, Cleobury, Mortimer, Salop.
1915. WRIGHT, JOHNSTONE CHRISTIE, F.R.S.E., Northfield, Colinton, Midlothian.
1913. YOUNG, THOMAS E., W.S., Auchterarder.
- 1912.*YULE, THOMAS, W.S., 16 East Claremont Street.

SUBSCRIBING LIBRARIES.

Baillie's Institution, Glasgow.
 Central Public Library, Bristol.
 Free Public Library, Boston, Massachusetts, U.S.A.
 Harvard College, Harvard, U.S.A.
 Institute of Accountants and Actuaries in Glasgow.
 John Rylands Library, Manchester.
 Public Library, Aberdeen.
 Public Library, Dundee.

Public Library of Victoria, Melbourne, Australia.
 Reform Club, Pall Mall, London, S.W.
 State Historical Society of Wisconsin, Madison, Wisconsin, U.S.A.
 University College, Dublin.
 University of Illinois, Urbana, Illinois, U.S.A.
 Yale University Library, New Haven, Connecticut, U.S.A.

LIST OF THE CORRESPONDING MEMBERS
OF THE
SOCIETY OF ANTIQUARIES OF SCOTLAND.

NOVEMBER 30, 1916.

- | | |
|---|---|
| 1900. BUCHANAN, MUNGO, 23 South Alma Street,
Falkirk. | 1904. MACKIE, ALEX., Pitressie, Abernethy. |
| 1908. CASH, C. G., Teacher, Edinburgh Academy, 15
Barnton Gardens, Davidson's Mains. | 1915. MATHIESON, JOHN, 42 East Claremont
Street. |
| 1913. FRASER, JOHN, 68 Restalrig Road, Leith. | 1915. MORRISON MURDO, Bragor, Lewis. |
| 1911. GOUDIE, JAS. M., J.P., Lerwick, Shetland. | 1911. NICOLSON, JOHN, Nybster, Caithness. |
| 1914. KIRKNESS, W., Fernlea, Kirkwall. | 1903. RITCHIE, JAMES, Hawthorn Cottage, Port Elphin-
stone, Inverurie. |
| 1910. LIVINGSTONE, MATTHEW, I.S.O., 32 Hermitage
Gardens, Edinburgh. | 1906. SINCLAIR, JOHN, St Ann's, 7 Queen's Crescent,
Edinburgh. |
| 1908. MACKENZIE, WILLIAM, Procurator-Fiscal, Ding-
wall. | 1913. STOUT, Miss ELIZABETH, Scalloway, Shetland. |

LIST OF HONORARY MEMBERS
OF THE
SOCIETY OF ANTIQUARIES OF SCOTLAND,
NOVEMBER 30, 1916.

[According to the Laws, the number is limited to TWENTY-FIVE.]

1879.

Rev. Canon WILLIAM GREENWELL, M.A., D.C.L., Durham.

1885.

Dr ERNEST CHANTRE, The Museum, Lyons.

1892.

Professor LUIGI PICORINI, Director of the Royal Archæological Museum, Rome.

1897.

W. M. FLINDERS PETRIE, D.C.L., LL.D., Edwards Professor of Egyptology in University College, London.

5 Dr SOPHUS MÜLLER, Secretary of the Royal Society of Northern Antiquaries, and Director of the National Museum, Copenhagen.

Professor OSCAR MONTELIUS, LL.D., Emeritus Royal Antiquary of Sweden, Stockholm.

1900.

EMILE CARTAILHAC, 5 Rue de la Chaine, Toulouse.

F. J. HAVERFIELD, M.A., LL.D., Camden Professor of Ancient History, Winshields, Headington Hill, Oxford.

Rev. S. BARING GOULD, Lew Trenchard, North Devon.

10 ROBERT BURNARD, Huccaby House, Princetown, S. Devon.

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1908.

Sir ARTHUR JOHN EVANS, M.A., D.C.L., Youlbury, near Oxford.

SALOMON REINACH, Director of the National Museum of Antiquities of France, St Germain-en-Laye.

Professor H. DRAGENDORFF, Zehlendorferstrasse, 55 Lichterfelde (West), Berlin-Gr.

14 Professor E. RITTERLING, Director of the Römisch-Germanische Kommission, Eschersheimers Landstrasse 107, Frankfort-on-Main.

LIST OF THE LADY ASSOCIATES
OF THE
SOCIETY OF ANTIQUARIES OF SCOTLAND,
NOVEMBER 30, 1916.

[According to the Laws, the number is limited to TWENTY-FIVE.]

1888.

The Right Hon. The COUNTESS OF SELKIRK, Balmae, Kirkcudbright.

1890.

Mrs P. H. CHALMERS of Avochie.

1894.

Miss EMMA SWANN, Walton Manor, Oxford.

1900.

Miss M. A. MURRAY, Edwards Library, University College, London.
5 Mrs E. S. ARMITAGE, Westholm, Rawdon, Leeds.

SOCIETIES, INSTITUTIONS, &c., EXCHANGING PUBLICATIONS.

Architectural, Archæological, and Historic Society
of Chester and North Wales.
Berwickshire Naturalists' Club.
Bristol and Gloucestershire Archæological Society.
British Archæological Association.
Buchan Field Club.
Buteshire Natural History Society.
Cambrian Archæological Association.
Cambridge Antiquarian Society.
Cumberland and Westmorland Antiquarian and
Archæological Society.
Derbyshire Archæological and Natural History
Association.
Dumfriesshire Natural History and Antiquarian
Society.
Edinburgh Architectural Association.
Elgin Literary and Scientific Society.
Essex Archæological Society.
Gaelic Society of Inverness.
Geological Society of Edinburgh.
Glasgow Archæological Society.
Hawick Archæological Society.
Historic Society of Lancashire and Cheshire.
Institute of Archæology, Liverpool.
Kent Archæological Society.
Lincolnshire Architectural and Archæological
Society.
New Spalding Club.
Perthshire Society of Natural Science.
Royal Anthropological Institute.
Royal Archæological Institute of Great Britain
and Ireland.
Royal Commission on Ancient and Historical
Monuments in Scotland.
Royal Historical Society.
Royal Irish Academy.
Royal Numismatic Society.

Royal Society of Antiquaries of Ireland.
Scottish Ecclesiological Society.
Shropshire Archæological Society.
Society of Antiquaries of London.
Society of Antiquaries of Newcastle-upon-Tyne.
Society of Architects.
Somersetshire Archæological and Natural History
Society.
Stirling Natural History and Archæological
Society.
Surrey Archæological Society.
Sussex Archæological Society.
Thoresby Society.
Viking Club.
Wiltshire Archæological Society.
Yorkshire Archæological Society.

FOREIGN SOCIETIES, UNIVERSITIES, MUSEUMS, &c.

Académie des Inscriptions et Belles Lettres, Paris.
Alterthumsgesellschaft, Königsberg.
Anthropologische Gesellschaft, Vienna.
Antiquarische Gesellschaft, Zürich.
Archæological Survey of India.
Berliner Gesellschaft für Anthropologie.
Bosnisch - Herzegovinisches Landes - Museum,
Sarajevo.
British School at Rome.
Bureau of Ethnology, Washington.
Centralblatt für Anthropologie, Stettin.
California University.
Christiania University.
Columbia University.
Commissione Archeologica Comunale di Roma.
Ecole d'Anthropologie de Paris.
Faculté des Sciences de Lyon.

Foreningen til Norske Fortidsminde-merke-
Bevaring.

Gesellschaft für Nützliche Forschung, Trier.

Göteborg och Bohusläns Fornminnesföreningen.
Göttingen University.

Historische und Antiquarische Gesellschaft, Basel.

Historische Verein für Niedersachsen.

Institut de Paléontologie Humaine, Paris.

Kiel University.

Kongelige Norske Videnskabers Selskab, Trond-
hjem.

Leipzig University.

Musée Guimet, Paris.

Musée National Suisse à Zürich.

Museum, Bergen, Norway.

Museum of Northern Antiquities, Christiania.

National Museum of Croatia.

Nordiska Museet, Stockholm.

Norsk Folkemuseum, Christiania.

Peabody Museum, Cambridge, Mass., U.S.A.

Physic-Ökonomische Gesellschaft, Königsberg.

Prähistorische Kommission der Kaiserliche
Akademie der Wissenschaften in Wien.

Provincial Museum, Toronto, Canada.

Rcale Accademia dei Lincei, Rome.

Römisch-Germanisches Central Museum, Mainz.

Römisch-Germanische Kommission des Kaiser-
lichen Archäologischen Instituts, Frankfurt
am Main.

Royal Academy of History and Antiquities,
Stockholm.

Royal Bohemian Museum, Prague.

Royal Canadian Institute, Toronto.

Royal Society of Northern Antiquaries, Copenhagen.

Saalburg Kommission, Homburg, v. d. H.

Smithsonian Institution, Washington, U.S.A.

Società Romana di Antropologia, Rome.

Société d'Anthropologie de Paris.

Société des Antiquaires de l'Ouest.

Société d'Archéologie de Bruxelles.

Société Archéologique de Constantine, Algeria.

Société Archéologique du Midi de la France.

Société Archéologique de Montpellier.

Société Archéologique de Moravie.

Société Archéologique de Namur.

Société des Bollandists, Brussels.

Société Finlandaise d'Archéologie, Helsingfors.

Société d'Histoire et d'Archéologie de Gand.

Société Nationale des Antiquaires de France.

Stadisches Museum für Volkerkunde, Leipzig.

Upsala University.

Verein für Nassauische Alterthumskunde, Wies-
baden.

Verein von Alterthumsfreunden im Rheinlande,
Bonn.

PERIODICALS.

L'Anthropologie, Paris.

The Antiquary, London.

LIBRARIES, BRITISH.

Advocates' Library, Edinburgh.

Athenæum Club Library, London.

Bodleian Library, Oxford.

British Museum Library.

Chetham's Library, Manchester.

Durham Cathedral Library.

Faculty of Procurators' Library, Glasgow.

Free Library, Edinburgh.

Free Library, Liverpool.

Mitchell Library, Glasgow.

National Library of Wales, Aberystwyth.

Ordnance Survey Library, Southampton.

Public Record Office Library, London.

Royal Library, Windsor.

Royal Scottish Museum Library, Edinburgh.

Scottish National Portrait Gallery Library.

Signet Library, Edinburgh.

Trinity College Library, Dublin.

United Free Church College Library, Edinburgh.

University Library, Aberdeen.

University Library, Cambridge.

University Library, Edinburgh.

University Library, Glasgow.

University Library, St Andrews.

Victoria and Albert Museum Library, London.

LIBRARIES, FOREIGN.

Imperial Library, Vienna.

National Library, Paris.

Newberry Library, Chicago, U.S.A.

Public Library, Hamburg.

Royal Library, Berlin.

Royal Library, Copenhagen.

Royal Library, Dresden.

Royal Library, Munich, Bavaria.

Royal Library, Stockholm.

PROCEEDINGS
OF THE
SOCIETY OF ANTIQUARIES OF SCOTLAND

HUNDRED AND THIRTY-SIXTH SESSION, 1915-1916

ANNIVERSARY MEETING, 30th November 1915.

THE HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

Scrutineers of the Ballot for the election of Office-Bearers were appointed, and the Ballot having been concluded they found and declared the List of the Council for the ensuing year to be as follows:—

President.

The Hon. JOHN ABERCROMBY, LL.D.

Vice-Presidents.

GEORGE NEILSON, LL.D.

WILLIAM MOIR BRYCE.

ERSKINE BEVERIDGE, LL.D.

Councillors.

JOHN R. FINDLAY.	} <i>Representing the Board of Trustees.</i>	DAVID MACRITCHIE.
The Hon. HEW HAMIL- TON DALRYMPLE, M.P.		CHARLES EDWARD WHITELAW.
Sir KENNETH MACKENZIE, Bart.,		WILLIAM MACKAY MACKENZIE.
<i>Representing the Treasury.</i>		The Hon. LORD GUTHRIE, LL.D.
PATRICK MURRAY.		Sir JAMES BALFOUR PAUL, C.V.O., LL.D.
JAMES E. CREE.		JOHN A. INGLIS.
J. M. MACKINLAY.		

Secretaries.

ROBERT SCOTT-MONCRIEFF, W.S. | J. GRAHAM CALLANDER.

For Foreign Correspondence.

The Rev. Professor A. H. SAYCE, M.A., | Professor G. BALDWIN BROWN.
LL.D., D.D.

Treasurer.

JOHN NOTMAN.

Curators of the Museum.

JAMES CURLE, W.S. | Professor THOMAS H. BRYCE.

Curator of Coins.

GEORGE MACDONALD, M.A., LL.D., F.B.A.

Librarian.

WILLIAM K. DICKSON, LL.D.

A Ballot having been taken, the following were duly elected Fellows:—

GEORGE BAIN, Proprietor and Editor of *The Nairnshire Telegraph*, Rosebank, Nairn.

CHARLES KIRKWOOD, Duncairn, Helensburgh.

ROBERT BURNS ROBERTSON, Resident Architect, H.M. Office of Works, Windsor Castle, Windsor.

NORVAL SCRYMGEOUR, Fellow of the Institute of Journalists, Helen Bank, Longforgan, by Dundee.

ANNIVERSARY MEETING.

3

JAMES SMITH, Conservator, Anthropological Museum, Marischal College, Aberdeen, 4 Belmont Place, Aberdeen.

JOHN WILSON PATERSON, A.R.I.B.A., Ancient Monuments Department, H.M. Office of Works, 3 Hope Park Terrace.

WILLIAM FORBES GRAY, 8 Mansionhouse Road.

The Secretary read the following list of Members deceased since the last Annual Meeting:—

Honorary Fellows.

JOSEPH DÉCHELETTE, Curator of the Museum, Roanne, Loire, France	Elected. 1908
CHARLES WILLIAM DYMOND, The Castle, Sawrey, Ambleside	1900
DR HANS HILDEBRAND, Emeritus Royal Antiquary of Sweden, Stockholm	1885
The Hon. Sir SCHOMBERG KERR McDONNELL, G.C.V.O., K.C.B., Dalness, Taymilt, Argyllshire	1909

Fellows.

W. LINDSAY ALEXANDER, Pinkieburn, Musselburgh	Elected. 1886
ARCHIBALD ANDERSON, 30 Oxford Square, London, W.	1864
J. G. HAWKESLEY BEDFORD, Larach Bhan, Kilchrenan, Argyllshire.	1903
JAMES BRUCE, W.S., 59 Great King Street	1882
Colonel JAMES CLARK, C.B., K.C., 10 Drumsheugh Gardens	1905
Sir THOMAS S. CLOUSTON, M.D., LL.D., 26 Heriot Row	1880
Sir JAMES DONALDSON, D.D., LL.D., Principal of the University of St Andrews, Scores Park, St Andrews	1867
WILLIAM DRUMMOND, 4 Learmonth Terrace	1878
ROBERT DE CARDONNEL FINDLAY, 19 Grosvenor Street	1905
GEORGE FORTUNE, Architect, Kilmeny House, Duns	1909
WILLIAM GARSON, W.S., 60 Palmerston Place	1891
The Hon. JOHN EDWARD GORDON, 44 Albert Court, Prince's Gate, London	1901
Major H. W. G. MEYER-GRIFFITH, F.R.G.S., A.D.C., Government House, Sierra Leone	1913
ARCHIBALD HEWAT, F.F.A., F.I.A., F.R.S.E., 13 Eton Terrace	1908
Rev. JAMES HUNTER, Fala Manse, Blackshiels	1891
Colonel WILLIAM JOHNSTON, C.B., LL.D., M.D., of Newton Dee, Murtle, Aberdeenshire	1900
Rev. THOMAS M. LINDSAY, D.D., LL.D., Principal of the Glasgow United Free Church College, 37 Westbourne Gardens, Glasgow	1873
Lieutenant-Colonel STEWART MACDOUGALL of Lunga, Ardfarn, Argyll	1912
A. L. MACGIBBON, A.R.I.B.A., 9 Lynedoch Place	1911
Lieutenant-Colonel JAMES MACKAY, V.D., J.P., The Manor House, Seend, Wiltshire	1890
Rev. ANDREW MELDRUM, Fasganeoin, Pitlochry	1887
The Right Hon. ANNA, COUNTESS OF MORAY, Tarbat House, Kildary, Ross-shire, and 7 Ainslie Place	1903

JOHN MUNRO, J.P., Dun Righ, Oban	Elected. 1897
W. RICHARD PHILLIPS, Westbourne Lodge, Goldhawk Road, Ravenscourt Park, London	1900
Major JAMES HALL SCOTT, Palma Place, Melrose	1914
Rev. JAMES HAY SCOTT, Corsknowe, High Cross Avenue, Melrose	1904
JAMES THIN, 22 Lauder Road	1896
DAVID J. VALLANCE, 27 Queen's Crescent	1895
THOMAS ALEXANDER WALLACE, 12 Abinger Gardens, Murrayfield	1910
Colonel THOMAS PILKINGTON WHITE, R.E., 3 Hesketh Crescent, Torquay	1869

The meeting resolved to record their sense of the loss the Society had sustained in the death of these members.

Mr R. Scott-Moncrieff, Secretary, read the following Report by the Council on the affairs of the Society for the year ending 30th November 1915, which, on the motion of the Chairman, was duly approved:—

Membership.—The total number of Fellows on the roll at 30th November 1914 was 735
At 30th November 1915 the number was 708
being a decrease of 27

There were 18 new members added to the roll during the year, while 30 ordinary members died, 10 resigned, and 5 allowed their membership to lapse. The decrease in the membership is to be regretted, but under the circumstances it is not to be wondered at. In fact, the Council feel that it is a matter of congratulation that the interest taken in archæological and antiquarian matters should have added 18 new members to the Society during a year of such sorrow, anxiety, and financial distress.

Among those members who have died during the year we must make special reference to Mr William Garson, who for a number of years was intimately associated with the affairs of the Society. From the death of Dr Skene in 1892 he acted as law agent. He was a member of the Council from 1902 to 1905, and again from 1906 to 1909. Subsequent to this latter period of service he was elected a Vice-President, retiring in rotation in 1912. He was deeply interested in our work, and, until prevented by ill health, a regular attender at our meetings. Through his instrumentality there was presented to the National Museum by the Right Hon. Lord Strathcona and Mount Royal the valuable collection of bronze brooches and personal ornaments from a ship burial of the

Viking time in Oronsay, and other bronze ornaments from Colonsay. During the years that Mr Garson was a member of Council his sound business acumen was of great value in directing the affairs of the Society.

Five Fellows have laid down their lives in the war, viz.:—Captain Robert de Cardonnel Findlay, Colonel James Clark, Major H. Walter G. Meyer-Griffith, Lieutenant-Colonel Stewart MacDougall of Lunga, and Major James Hall Scott.

Captain Findlay was elected a Fellow of the Society in 1905, and was a member of the Council during the years 1911-1914. He took a deep interest in its affairs, and attended the meetings regularly. His interest in antiquarian matters was hereditary, for he had among his forebears Adam de Cardonnel, author of *The Picturesque Antiquities of Scotland*, and friend of Grose, Riddell of Glenriddell, and other antiquaries of that day. He was particularly interested in ancient weapons, and had a good collection of swords. He was also the proud possessor of the original MS. of "Tam o' Shanter." The last meeting at which he was present was the Annual Meeting last year, when he paid a visit to Edinburgh preparatory to joining his regiment. He fell in the charge of the Seaforths on 12th March.

Colonel Clark was also elected to the Society in 1905. It is a little wonderful that amidst his multifarious public interests he should have found time to be interested in antiquarian matters, but that he was so indicates the wide range of his sympathies. So much has been written about his work that nothing need be added here. He fell on 10th May.

Major Meyer-Griffith joined the Society in 1913. He took a keen interest in antiquarian studies, and contributed a paper in 1913 on "The Ruthven Barracks in Badenoch." His particular bent was, however, genealogical research. Major Meyer-Griffith, who had served through the South African War, was, at the outbreak of the war, A.D.C. to the Governor of Sierra Leone. Feeling a call, however, for more active service, he threw up that appointment and joined the expedition to the Cameroons as Chief Ordnance Officer, becoming later Officer Commanding Lines of Communication. He fell on 28th May, charging at the head of his men.

Lieutenant-Colonel Stewart MacDougall became a Fellow in 1912, and was killed in Flanders on 28th July. He had seen much service during his life, and at the time of his death was in command of the 10th Battalion Gordon Highlanders.

Major James Hall Scott joined the Society so recently as 1914, and was killed in the great advance in France on September 25th to 27th

of this year. Though he had taken no active part in the work of the Society, his interest in antiquarian research, especially in any way connected with his native Border district, was great.

The Society has also to mourn the loss by the war of two of its Honorary Fellows. Joseph Déchelette was Curator of the Museum at Roanne, and one of the most distinguished archæologists of his day. Though his age entitled him to a comparatively safe post in the performance of his military duty, he refused to accept of such, choosing rather to proceed to the front, where he fell in the defence of his country. The Society was honoured by having the name of a man of such attainments on its list of Honorary Fellows, and joins in the general regret for the premature death of so great a scholar. His output of literary material was enormous. No student of Roman relics in Scotland can handle the subject without frequent reference to his *Les Vases céramiques ornés de la Gaule romaine*; and the value to the archæologist, whose study is more general, of his *Manuel d'Archéologie* is incalculable.

The Hon. Sir Schomberg K. McDonnell has also, within the last few days, fallen at the front in France. He was elected an Honorary Fellow in 1909, and, although he never took an active part in the Society's work, he was deeply interested in archæology, and in his position as Secretary to His Majesty's Office of Works was able to make his interest effective for the preservation of ancient monuments throughout the country. It may also be stated that he had much to do with the development of the scheme for the protection of ancient monuments, and was a member of the Ancient Monuments Board.

There is one other name to which the Council must refer in this connection, viz. that of Bugle-Major Wishart, the Museum attendant who had charge of the gallery on the top floor containing the Egyptian and Comparative collections. His face and figure must be familiar to those members of the Society who were in the habit of visiting the Library, as well as to many members of the public. Wishart, who had seen much service, and was no longer a reservist, volunteered for service at the beginning of the war. He was appointed bugle-major to the 5th Foreign Service Battalion Royal Scots, and fell at Gallipoli on 12th May. He was an ideal attendant, who took a keen and highly intelligent interest in the objects under his charge, and delighted to guide the steps of visitors to relics which he considered of peculiar importance. Not the least pleasing trait of his character was the trouble he took to stimulate the interest of children in the gallery.

The Council desire to record their pride and sorrow at the death

of these gallant men, and their deep sympathy with their relatives in their affliction.

The staff of the Museum, considerably reduced when the galleries were dismantled, has been further diminished by the death of Matthew Wishart and the departure on active service of Mr A. J. Edwards, the Assistant-Curator, who has been acting as a sergeant-major in R.A.M.C. Territorial Force since the commencement of the war, and is presently stationed abroad, and of George Archibald, the Library attendant, who recently enlisted in the Royal Field Artillery.

Proceedings.—In last year's Report the Council referred to the fact that the volume of the *Proceedings* for 1915 forms the first of a new series, and that it was proposed to take advantage of this to effect improvements in the appearance of the annual volumes and in the quality of the illustrations. The advance copy of the *Proceedings* for the past year, which is on the table, gives effect to such improvements as could be carried out with a due regard to economy. The number of papers read at the meetings of the Society during the year was eighteen, as compared with twenty-six last year; but though fewer in number, they lack nothing in interest and importance, and carry on the high standard of scientific attainment which this Society has always aimed at. The terrible distractions of the present time, as well as the insistent need for every man's services to help the country, naturally divert the energies of most of our members from what would have been their pursuits in peace. We may be thankful, therefore, to have as excellent a volume for our forthcoming issue as the advance copy demonstrates. A glance at the table of contents indicates how great is our progress in knowledge even in such a year as we have passed through. The group of circular fortlets in Glenlyon and neighbourhood, which have long been known to archaeologists, has been examined by Professor Watson, who tells us all there is to be learned about them at present. New sculptured stones of the early Christian period have been discovered in Aberdeenshire, and reported by Mr Ritchie. We welcome a young archaeologist in Mr Angus Graham, who has communicated an account of the excavation of a fort in Argyllshire. Another new Fellow, a lady, the Countess de Latour, has explored with masterly attention to detail a broch in Skye which has yielded a valuable necklace of amber beads and other relics. By the excavation of two caves in Fife, Mr Wace and Professor Jehu have secured further evidence of the habitation of such abodes in Romano-British times. A necklace of beads, probably unique as far as Scotland is concerned, found in a cist at Dalmeny,

is considered with regard to a Celtic or Anglo-Saxon attribution by Professor Baldwin Brown. Mr Eeles has drawn our attention to remains of stained glass found in the ruins of Holyrood Chapel. Dr Hay Fleming, whose special field of observation is St Andrews, records discoveries in the Castle and Cathedral there. Mr H. R. G. Inglis has continued his study of ancient bridges. Mr David MacRitchie brings to our notice a subject new to our inquiries—the survival of early Celtic numerals concealed in counting-out rhymes; while Mr Alan Reid's indefatigable research in country churchyards has been rewarded by the finding of the remains of a highly ornamented sarcophagus of, perhaps, twelfth-century date at Dalmeny, of which he has given us an account. In addition to those mentioned, we have three communications of unusual importance—first an account by Dr George Macdonald of the excavation of a Roman pottery kiln at Munrills, near Falkirk, and of the results of further exploration on the Antonine Vallum, by which, bit by bit, he is rescuing the complete course of the Antonine Vallum, where for countless generations it has been lost sight of; second, a record of the first year's exploration of Traprain Law by the Director of the Museum, which, as dealing with Romano-British times and with native as opposed to Roman culture, is probably one of the most important communications made to the Society in recent years. The paper is furnished with numerous illustrations of finds. Lastly, a report by Mr W. J. Hocking, Librarian of the Royal Mint, on a collection of coining and medal dies which have lain in the Museum for many years. Among these is a die for striking silver pennies of the reign of David II.; also an example of an early die for striking medals by mechanical means. Mr Hocking's communication will imbue this collection of coining instruments with much fresh interest.

Such is the record of the past year's work, and, under all the circumstances, it is one on which we may congratulate ourselves.

Further, with regard to the *Proceedings*, the Council are glad to be able to report that they have arranged with Miss Borland for the preparation of a second volume of the General Index, which will cover the last two series of volumes of the *Proceedings*. It is hoped that this will be ready for publication during the coming year.

The Museum.—The structural work in connection with the Museum building is still far from completion, and the Society are again indebted to the courtesy of the Royal Society for the use of a room in which to hold their meetings. The complete disarrangement of all such Government contracts makes it impossible to give any indication as to

when the Museum will again be open to the public and the Library to the Fellows.

The objects added to the national collection during the past year by donation, which includes the objects found at Traprain, number 348; those acquired by purchase number 17; making in all 365.

Among the donations are an interesting collection of eleven beads and a portion of the rim of a glass vessel which had been worn as a bead, found in a cist at Hound Point, Dalmeny, presented by the Right Hon. the Earl of Rosebery; and a remarkable necklace of amber beads and other relics found in the Broch of Dun an Iardhard, Skye, presented by the Countess Vincent Baillet de Latour.

Included in the objects purchased are a handled urn of the Bronze Age from Balmuick, Perthshire, found many years ago and described at the time in the *Proceedings*, and which the Society is now fortunate to possess, being the only one of its kind known to exist in Scotland; and two fine objects of gold—a lunula and a twisted armlet. Both the latter were in the collection of Adam Sim of Coulter, and were found on the borders of Lanarkshire previous to 1860. They have been sold by Mrs White of Netherurd, niece of Mr Adam Sim, on behoof of the Red Cross Society of Scotland; and, in place of being exposed to public sale, the National Museum was enabled, by arrangement with Mrs White, to acquire them privately.

Excavations.—During the past summer the Society continued their excavations on Traprain Law, commencing on the 26th April and completing the filling in of the ground opened on 11th September. The work was, as previously, carried on by a very small staff, and either Mr A. O. Curle or Mr Cree was in regular attendance. Fresh ground was broken on the terrace adjacent to the quarry, more than a quarter of a mile distant from where we conducted last year's operations, in order to ascertain whether this portion of the hill had formed part solely of the earlier enceinte.

With regard to the number of relics found on this area the result was disappointing, but otherwise the evidence acquired was of very considerable importance, and showed that this portion of the hill had been simultaneously under occupation at four periods contemporaneous (as borne out by the witness of the pottery) with the occupations brought to light on the other excavated site.

The important work of the season was, however, carried out, continuing northward from the main area explored last year. Here four distinct occupation surfaces were ascertained, but no structural remains other than hearths were encountered, so that no additional light has been

thrown on the plan of the buildings which stood on the ground in any of the periods of habitation. At one place, however, a large quantity of burnt clay, showing the impress of upright posts and of horizontal wattles, afforded very clear indication of the character of the structures. The hearths, for the most part rectangular and oblong, were not placed in any regular direction so as to suggest that the houses had been laid down in any uniform plan. There was, in fact, nothing to afford any evidence of the regular arrangement that would characterise a Roman occupation.

Pottery, both Roman and native, was, as last year, plentiful, the former ranging in date from the first to probably the fourth century.

The coins recovered number 18, all Roman, found in each of the four levels; and it is a remarkable fact that, whereas none of the coins from the two lowest levels were of subsequent date to the Antonine period, none of those from the two higher strata belong, apparently, to a period earlier than the beginning of the fourth, or later than the beginning of the fifth century.

Among the miscellaneous relics some notable objects came to light. A portion of fourth-century Roman glass was found bearing a human head with a peculiar head-dress engraved by the wheel; two clay moulds for casting small bronze objects, one of them absolutely complete and ready for the reception of the molten bronze, and the other slightly imperfect; two small triangular crucibles; a large number of fragments of armlets of glass and of jet; two particularly fine bronze fibulæ, one inlaid with silver and the other beautifully enamelled in red and blue; two silver finger-rings; various bronze harness mountings, one of them finely enamelled; bronze pins; a bronze ferrule for the butt of a spear, terminating in an iron point; a Roman folding spoon of bronze, with a handle in the form of an extended lion; of iron, the point ends of two swords—narrow-bladed, double-edged weapons—and the tang of another; several pieces of the tyres of wheels; two iron fibulæ of rare type; tools and nails; moulds of stone for ingots; a fine stone lamp; and, indicating the presence of dwellers on the hill at a more remote period than that shown by any of these four occupations, three leaf-shaped arrow-heads of flint, a small bronze chisel or punch, and a portion of a stone axe.

On the whole, the relics are little less numerous than those recovered last year, and fortunately they vary from them.

The site is full of promise, and, should the Society be able to continue the excavation in future years, the results will be of outstanding importance to British archaeology, and will greatly enrich our national collection.

Library.—During the past year 52 books have been presented to the Library and 21 have been purchased. In addition, a considerable number of publications of learned societies, etc., have been received by way of exchange.

Rhind Lectureship.—The Rhind Lectures for 1914 were delivered in the spring of the year by Mr F. C. Eeles, whose subject, "The Liturgy and Ceremonial of the Mediæval Church in Scotland," proved so attractive that at the request of the public an additional lecture had to be delivered. The Rhind Lectures for 1915 were delivered for the first time for many years at their proper date, viz. the autumn of this year, the subject being "Medals of the Renaissance," and the lecturer Mr G. F. Hill, Keeper of Coins and Medals in the British Museum. The subject of the lectures for 1916 is "Celtic Place-Names in Scotland," and the lecturer Professor Watson.

The Gunning Fellowship.—Owing to the war, this Fellowship has not been granted in the past year.

The Chalmers-Jervise Bequest.—The area selected for the prize essay for the past season was Roxburghshire, and, notwithstanding plenteous advertisement both in the papers and by letter to the secretaries of local Societies, only two essays have been sent in; one deals with "The Chapel of St Mary's Hermitage," the other with "Some Implements and Weapons of the Stone Age." To Miss M. Robson Scott, the writer of the latter, the prize has been awarded.

Signed on behalf of the Council,

JOHN ABERCROMBY.

In the absence of the treasurer, the annual statement on the Society's funds, which will be printed and circulated among the members, was read by Mr J. Graham Callander, secretary. On the motion of the Chairman, a hearty vote of thanks was accorded to Mr Notman for his gratuitous services as treasurer.

MONDAY, 13th December 1915.

The HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

A Ballot having been taken, the following was duly elected a Fellow :—

CLIFTON KELWAY, F.R.Hist.S., 3 Stone Buildings, Lincoln's Inn,
London, W.C.

The following Donations were announced :—

(1) By the Rev. ROBERT DICK, Colinsburgh, Fife.

Token-mould of clay-slate, in two parts, for casting tokens of the Associated Congregation of Kilconquhar, and relative Token; 1796.

Upper portion of a Mould of brass with a wooden handle, for casting tokens of the Associated Congregation of Huntly; 1815.

(2) By Mr DAVID ROBERTSON, 23 St Ronan's Terrace.

Bronze Flanged Axe with stop ridge, $6\frac{1}{4}$ inches in length, $2\frac{1}{2}$ inches across the cutting edge. Locality unknown.

(3) By Mrs MACFIE, Borthwick Hall, Heriot.

Collection of Church Tokens, namely :—Greenock, 1761; Greenock, 1775; Greenock, 1792 (Gaelic Church); Greenock, 1798; Greenock, 1823; Port Glasgow, 1761; Port Glasgow, 1778; unidentified, E.R.P., 1746.

(4) By The Right Hon. The EARL OF WEMYSS.

Fragments of Urn of beaker type, found in a cist at Seton, Haddington, in April 1915. Original height 7 inches. (See subsequent communication by J. Graham Callander.)

(5) By J. GRAHAM CALLANDER, *Secretary*.

Shard of Pottery, with a leaf-like decoration, from the Pigmies' Isle. Butt of Lewis. Object of Bone, highly polished, consisting of a shank with a small knob at either end; small, perforated, rhomboidal Object of Bone, from earth-house, Bruthach-a-tuath, near Balivanich, Benbecula. Fragment of a large hand-made Vessel with a notched fillet encircling it, and chevron ornament, from a kitchen midden at the seashore west of and opposite Balelone, North Uist, and adjacent to a buried earth-house. Shards of black and grey hand-made Pottery, two pointed

Splinters of Bone, and Pebble of Pumice-stone, from the more southerly of the kitchen middens, Daliburgh, South Uist.

(6) By Mrs BRUCE of Sumburgh, F.S.A. Scot.

Pin of bronze with a square head, the angles bevelled off, $6\frac{1}{8}$ inches in length; found in excavating the Broch of Jarlshof, Sumburgh, Shetland. See *Proceedings*, vol. xli. p. 28.

Books for the Library:—

(1) By J. WICKHAM LEGG, M.D., F.S.A., 4 St Margaret's Road, Oxford.

Inventories of Christchurch, Canterbury, with Historical and Topographical Introductions and Illustrative Documents. Transcribed and edited by J. Wickham Legg, M.D., F.S.A., and W. H. St John Hope, M.A. Westminster, 1902. 8vo.

(2) By THOMAS JOHNSON WESTROPP, M.A., M.R.I.A., 115 Strand Road, Sandymount, Dublin, the Author.

Prehistoric Remains (Forts and Dolmens) in Burren and its South-Western Border, Co. Clare. Part XII. North-Western Part. Pamphlet, n.d. 8vo.

Fortified Headlands and Castles in Western Co. Cork. Part I. From Cape Clear to Dunmanus Bay. Dublin, 1915. 8vo.

Ancient Remains on the West Coast of Co. Clare. Pamphlet. 8vo.

The Earthworks and Castle of Bunratty, Co. Clare. Pamphlet. 8vo.

(3) By HIS MAJESTY'S GOVERNMENT.

Calendar of Fine Rolls. Vol. v. 1337-1347.

Calendar of Papal Registers. Papal Letters, x. 1447-1455.

Calendar of Inquisitions, Henry VII. Vol. ii.

Register of the Privy Council of Scotland. Vol. vii. 1681-1682. Third Series.

Catalogue of Ancient Deeds. Vol. vi.

Calendar of State Papers. Domestic Series. January 1st, 1679, to August 31st, 1680.

(4) By Dr MARCEL BAUDOUIN, 21 Rue Linné, Paris, the Author.

Les Sculptures et Gravures de Pieds Humains sur Rochers. Paris, 1914. 8vo.

Bulletin de la Société Préhistorique Française. Tome xii. No. 3. Mars 1915.

(5) By DAVID MURRAY, LL.D., F.S.A. Scot., the Author.
Merchiston Castle School, 1855-58. Glasgow, 1915. 8vo.

(6) By the Venerable Archdeacon ALGERNON WARD, M.A. Cantab.,
F.S.A. Scot.

Municipalité d'Alexandrie. Alexandria ad Ægyptum. Guide de la
Ville Ancienne et Moderne, et du Musée Gréco-Romain. Par E. Breccia.
Bergamo, 1914. 12mo.

(7) By The Hon. JOHN ABERCROMBY, LL.D., *President*, the Author.
The Prehistoric Pottery of the Canary Islands and its Makers.
London, 1914. 8vo.

(8) By ALEXANDER FRASER, LL.D., Litt.D., F.S.A. Scot., the Author.
Gearr-Sgeoil air Sir Seoras Uilleam Ros agus air mar a Thuinich na
Gaidheil ann an Canada Nachdrach. Toronto, 1915. 8vo.

(9) By the Curator of the Colchester Museum.
The Colchester Museum of Local Antiquities. Report of the Museum
and Muniment Committee for the year ended 31st March 1915.

(10) By CHARLES B. BOOG WATSON, F.S.A. Scot., the Author.
Some notes on Moray House, Edinburgh, forming part of "Alexander
Cowan, his Kinsfolk and Connections." Privately printed 1915. 4to.

(11) By THOMAS SHEPPARD, M.Sc., F.G.S., F.R.G.S., F.S.A. Scot., the
Author.
The Evolution of the Potter's Art. London, n.d. 4to.
Hull Museum Publications, No. 103. Quarterly Record of Additions.

(12) By the FIELD MUSEUM OF NATURAL HISTORY, Chicago, U.S.A.
Field Museum of Natural History. Report Series. Chicago, U.S.A.
Vol. iv., No. 5; Vol. xiii., No. 2; Vol. xiv. No. 1.

(13) By Dr O. GUELLIOT, the Author.
Marnien ou La Tene 1. Extrait du Bulletin de la Société Préhistori-
que Française.

(14) By JAMES BARRON, F.S.A. Scot.
Transactions of the Inverness Scientific Society and Field Club.
Inverness, 1915. 8vo.

- (15) By ^{Dr} J. LEITE DE VASCONCELLOS, Professor da Faculdade de Letras da Universidade de Lisboa, Director do Museu Etnológico Português, the Author.

De Campolide a Melrose, Relação de uma viagem de estudo. Lisbon. 1915. 8vo.

- (16) By JAMES LYLE, F.S.A. Scot.

Poems and Songs, by Richard Gall, with a Memoir of the Author. Edinburgh, 1819. 8vo.

St Baldred of the Bass, a Pictish Legend: The Siege of Berwick, a Tragedy; with other Poems and Ballads founded on the local Traditions of East Lothian and Berwickshire. By James Miller. Edinburgh. 1824. 8vo.

The Luckless Drave, and other Poems. By the Author of "Verses in Memory of Dunbar Collegiate Church." Edinburgh, 1820. 8vo.

- (17) By the ARGYLL COUNTY COUNCIL.

List of Ancient Monuments and Historic Buildings in the County of Argyll. 1915.

- (18) By W. J. HOCKING, Librarian of the Royal Mint, the Author.

Simon's Dies in the Royal Mint Museum, with some Notes on the Early History of Coinage by Machinery. Reprint from *The Numismatic Chronicle*.

- (19) By the TRUSTEES OF THE BRITISH MUSEUM.

Catalogues of English Book Sales, 1676-1900, in the British Museum. London, 1915. 8vo.

Select Bronzes, Greek, Roman, and Etruscan, in the British Museum.

Select Italian Medals of the Renaissance in the British Museum. London, 1915.

Queen Mary's Psalter. Miniatures and Drawings by an English Artist of the 14th Century. Reproduced from Royal MS. 2 B. VII. in the British Museum. London, 1912. 4to.

- (20) By Monsieur ETIENNE DUPONT, Lauréat de l'Académie Française. Juge, St Malo, the Author.

Les Prisonniers de Guerre Anglais en France au XVIII^{me} Siècle. Pamphlet. Paris, 1915.

Purchases, etc., acquired by the Purchase Committee during the Recess, 10th May to 30th November:—

Vessel made from the vertebra of a whale, which has been hollowed out to a depth of 6 inches, a breadth of 10 inches in the centre, and 7 inches at the mouth; and a subconical Whorl of Steatite, $1\frac{1}{4}$ inch in diameter and $\frac{3}{4}$ inch in thickness. Found at Links of Minn, Burra Island, Shetland.

A Collection of bone objects found at an earth-house at Udal, North Uist:—Double-toothed Comb, imperfect, ornamented along the central bar with dot and circle ornament, $3\frac{1}{2}$ inches in length; Pin of polished Bone with triangular head, $5\frac{3}{8}$ inches in length; Bodkin of Bone, $3\frac{1}{4}$ inches in length; Awl of Bone, $2\frac{7}{16}$ inches in length; Splinter of Bone, fashioned to a point at one end, $2\frac{3}{8}$ inches in length; Whorl of cetacean Bone, $1\frac{3}{8}$ inch in diameter. Amulet of Stone, pierced towards one edge, formed of a greenish-yellow pebble, $\frac{7}{8}$ inch in longest diameter, found adjacent to the earth-house.

Lunula of Gold, 7 inches in greatest diameter, $1\frac{1}{16}$ inch in breadth at the middle, tapering to the extremities, where it terminates in sub-oval, disc-like expansions; ornamented on the inside margin with three parallel incised lines, the outer and inner of which are dotted with small punctulations; and on the outside margin with four similar lines, the inner and third of which are marked with small punctulations: weight, 1 oz. 7 dwt. Found on the Farm of South Side, near Coulter, in Lanarkshire, in 1860, along with another specimen already in the Museum, and formerly in the collection of Adam Sim of Coulter. Fig. 1, No. 1.

Armlet of Gold formed from a thin fillet, tapering to the extremities, worked into a spiral like the thread of a screw, terminating in a hook at each end, $13\frac{1}{4}$ inches in length, weight 9 dwt. Found near the borders of the Parish of Coulter in Lanarkshire, and formerly in the collection of Adam Sim of Coulter. Fig. 1, No. 2.

Acquired through the King's Remembrancer:—

Three Trade Tokens from the Hoard of Bronze and Silver Coins found at Montcoffer, Banffshire, 30th September 1915 — Edinburgh Halfpenny, Hutchison's, 1790; Edinburgh Halfpenny, Hutchison's, 1791; Montrose Halfpenny, dated 1797 (see subsequent communication by George Macdonald, C.B., LL.D.).

Books for the Library:—

History of Burntisland, Scottish Burgh Life, more particularly in the time of the Stuarts. By Andrew Young. Kirkcaldy, 1913. 12mo.

The Development of Arabic Numerals in Europe. By G. F. Hill.
Oxford, 1915. 8vo.

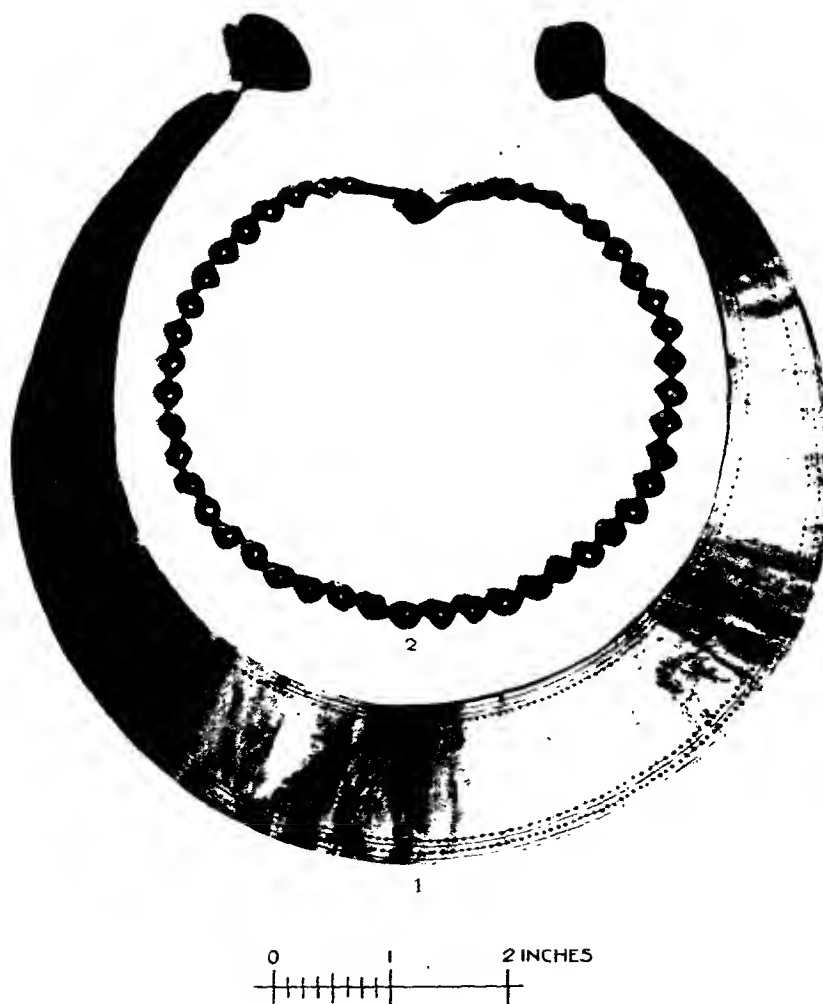


Fig. 1. Lunula and Armlet of Gold from Lanarkshire.

Fasti Ecclesiae Scoticanæ, The Succession of Ministers in the Church of Scotland from the Reformation. Vol. I. Synod of Lothian and Tweeddale. By Hew Scott, D.D. Edinburgh, 1915. 8vo.

VOL. L.

Nuovo Bullettino di Archæologia Cristiana. Vol. xix. Parts 1-4; Vol. xx., Parts 1 and 2; Vol. xxi., Parts 1 and 2.

The British Numismatic Journal. Vols. i.-x.

Proceedings of the Prehistoric Society of East Anglia. Vol. i., Parts 1-4; vol. ii., Part 1.

Report on the Excavations at Grime's Graves, Weeting, Norfolk. March-May, 1914. London, 1915. 8vo.

The Bailies of Leith. By D. Robertson, M.A., LL.B., S.S.C., Town Clerk of Leith. Leith, 1915. 8vo.

Bamff Charters, A.D. 1232-1703. By Sir James H. Ramsay, Bart., of Bamff, Litt.D., LL.D. Oxford University Press, London, etc., 1915. 4to.

The following Communications were read:—

I.

THE ROADS THAT LED TO EDINBURGH. ETC.¹ BY HARRY R. G. INGLIS. F.S.A. SCOT.

I. FEATURES OF EARLY ROADS.

In endeavouring to ascertain which are the earliest roads leading to Edinburgh, investigation is very much circumscribed by the absence of early road-maps, as the first of any real service were those of Adair, issued as late as 1680. If we go farther back than that, we are only able to guess roughly the course of such roads from travellers' narratives, and from early documents, which do little more than let us know of their existence, without specifying their position.

Even though roads are referred to in early charters in describing the boundaries, the term then employed did not carry with it the idea of a modern highway, built, fenced, and ditched, but rather that of a right-of-way, where a beaten track, the marks of a sledge, or of an occasional wheeled waggon, marked out the road on the hillside, or a narrow causeway or a paved ford left a more permanent record across morass or stream. Fences or walls seem to have been non-existent, but standing stones and crosses marking parish² or estate boundaries were met with frequently in their course. In fact, where a

¹ See also "The Roads and Bridges in the Early History of Scotland," *Proc.*, vol. xlvii., 1912-13, p. 303.

² The Buckstane, Comiston Road, Edinburgh, marks the parish boundary of Liberton and Colinton on the Dumfries road.

road was used for the old parish boundary, the antiquity of that road stands almost unquestioned.

Whether the side drains, banks, or dykes that are observed along some of the old roads are part of their original formation, or are eighteenth-century improvements, is at present a matter of some uncertainty; but one would be inclined to infer that, as there was no national authority constructing roads, and legislation merely provided for upkeep, such banking as existed would only be of a very insignificant character, little more than would serve to define its limit in cultivated lands. In no other way can we account for the complete obliteration of some of the well-known ancient roads for long stretches of their course.

As an example, the road that passes along the foot of the Pentlands, from Edinburgh through Morningside by Glencorse to Carlops and Dolphinton, betrays, after the Buckstane, little sign of its original course until near Nine Mile Burn, and even there it is merely a grassy mark on the hillside; but as it nears Lynedale (towards West Linton) it is well banked for a short distance, only to become a grassy track once more on the open moor at the golf course on the south side of the Lyne. On the old Soutra road there appears to have been no banking between Fala and Channelkirk; and on the old Lasswade road, while the outline of the roadway is well marked across the fields between St Catherine's and Gracemount, its appearance does not suggest anything more than a hard beaten track across the land.

Banking at the side of old roads, one is inclined to think, may have had its origin in the abuse of the road privileges by the cattle drovers in the eighteenth century. When cattle traffic to the English markets began after the Union, the small herds passing along caused no inconvenience; but as the trade reached huge dimensions, the great droves going to England trampled down the adjoining fields far beyond the limits of forbearance, and on this account quarrels arose between farmers and drovers, frequently leading to blows. For this reason one is inclined to hesitate before pronouncing in favour of an earlier date for such banks, because if they had existed previously there would have been little reason for the quarrels. Where there was no cultivation, there was no necessity for having the road confined in this way, and this theory seems to fit in with general observation.

The making of new roads in the last few hundred years has in many instances led to these old routes being abandoned, so that in agricultural districts the traces of former roads have frequently dis-

appeared, while in the moorlands the slightly beaten path or pack-horse track has merged into the surrounding moor and left no trace of its existence. In the latter instance, local knowledge and tradition usually point the course with some accuracy; but in the former, local knowledge is not always reliable in its estimate of antiquity, as the "old" road may be only the predecessor of the present highway and not the most ancient route.

Drove roads¹ have to be dealt with on a special footing, for we have to recollect that, owing to Scotland being the ancient enemy of England, such roads as existed were chiefly used in connection with the local markets, and those used for traffic to England can only have been brought into extensive use after 1603, when the Union of the Crowns opened the markets of England to Scottish traders.

The "Thieves'" roads,² "Salters'" roads,³ "Herring" roads,⁴ which are pointed out in various parts, appear to have been lines used for occasional traffic, and thus it is likely that they were mere tracks, rather than roads in the modern sense of the word, unless these titles are corruptions of other names, the explanation of which would make their origin clearer.

Therefore, in considering the origin of the roads, we have to recognise that their existence depends on the centres of population, and that their earliest course is marked out by considerations of dryness of surface, rather than by directness of course. The earliest roads were undoubtedly *Ridgeways*⁵—roads following the dry, firm surface of the watershed,—and one has only to study carefully the relation of two parallel roads in this respect to find out which is the more ancient. It is to the Romans that we owe the discarding of *Ridgeways* for constructed roads leading directly from point to point, and it is for this reason that a study of ancient geography is necessary before going into detail in regard to the direction of the roads and the points to which they led. Unfortunately our knowledge of early Scotland is at present almost a blank in this respect, and even though one may consider the aspects of ancient geography as far as we know it, such a study does no more than show how vague and inconclusive is the information, and how little foundation we have to build upon.

Therefore, in approaching this subject entirely from a geographic

¹ The road to Lasswade through Liberton appears to be the only "drove" road spoken of near Edinburgh.

² Near West Linton: between Drumelzier and Moffat; and at Penmanshiel (Cockburns-path). There is a Thieves' bridge at Aberdeen, mentioned in 1410.

³ Near Dalkeith, and near Fala: and there is a "Salters' Ford" at Melrose.

⁴ Near Dunbar to Lauder.

⁵ Using the English name, as there seems to be no equivalent in Scotland.

point of view, it is necessary to go over the various important maps of Scotland and study the chief points of which each survey has made a feature, distinguishing copies from originals, in order that we may test the value of each map, for the purposes of research.

II. EARLY MAPS.

The earliest known map of Britain is the one furnished by Ptolemy's *Geography*.¹ Although it is generally spoken of as a map, it should be more accurately termed a geographical index of the rivers, bays, promontories, and towns, with the latitude and longitude of each. To draw the map, it is only necessary to plot down the lines of latitude and longitude, and then, marking the exact position of each point, to connect the consecutive places so as to form a coast-line, the result being an outline of Britain (fig. 1). The map drawn in this way, while showing England with a comparatively recognisable outline, turns Scotland at right angles to it, and makes it lie east and west instead of north and south. Many explanations have been given of the reason of this curious feature, which cannot be entered into here, but it seems undoubtedly to have been caused by an effort to reconcile conflicting geographical information, and at least make it presentable. A careful examination shows that while the names on the coast outline are not very far out of sequence, the positions of the inland towns are in hopeless confusion. This clearly points to there having been several sources of information—the one, a nautical description of the coast, evidently from a fairly accurate source; and the other, a trader's or military description, plotted down by a person who had no idea of the relative positions of the towns.

It is significant that in England the town names correspond only with stations in a certain number of the routes in the *Antonine Itinerary*,² but that names taken from routes 9 and 12 of that work are wanting. It is also evident from the relative positions of York, Aldborough, and Catterick that the Roman road to the north appears to have been taken as following the meridian, instead of pointing NNW. The same feature is also observed in the west of England, where two stations on one of the Antonine routes, Uriconium and Mediolanum, are also placed as lying directly north and south. The importance of these facts must not be overlooked, as, even though the positions of many of the towns are quite wrong, they seem fairly accurately placed in regard to their neighbours, showing that their place is relative to one another in the same group, and not to the rest of the country.

¹ *Circ.* A.D. 150.

² Referred to below.

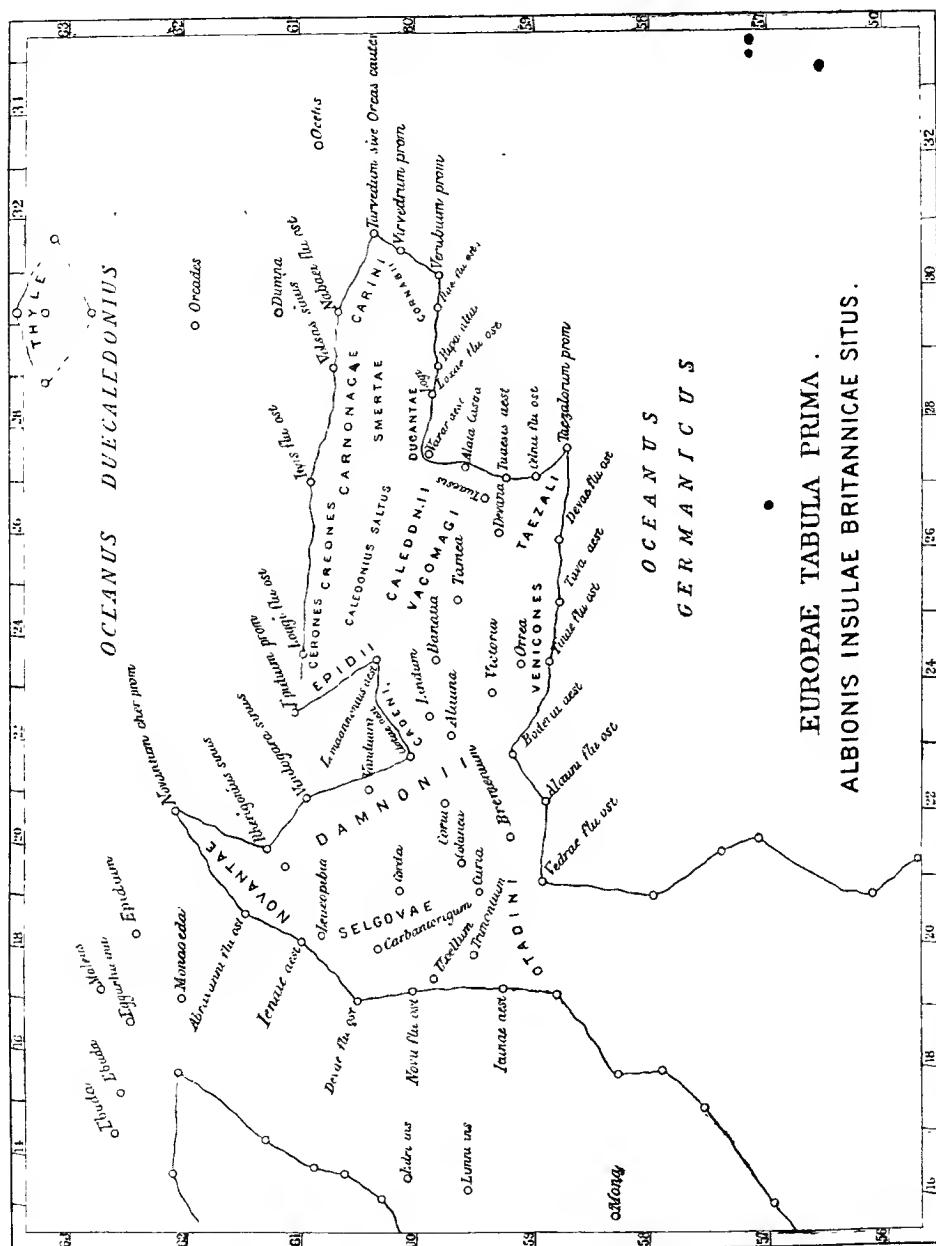


Fig. 1. Map of Scotland, showing its relation to England and Ireland, made up from Ptolemy's Tables for the British Isles.

While we have this knowledge of the source of the information as to the towns in England, the source of information as to the towns in Scotland is unknown to us, so that whatever grouping has been adopted, it can be taken as being only approximate and of no definite value, until we have the key to the riddle in our hands.

Although Ptolemy's map is of no use to us in determining the roads, it is of this service, that it gives us an inkling of the names of the chief places in Scotland which the Romans would require to subdue in their northward campaign.

The earliest known reference to the roads in Britain is the Roman *Antonine Itinerary*, compiled apparently about the Second Century, and added to at later periods. There are fifteen routes, varying in length from 70 to 506 miles, with the distance between each station carefully noted. When these are plotted out on a map, they are in most cases so accurate that the locality of the Roman station can be placed with very little doubt. In several cases the route is quite unintelligible in the light of our present knowledge; but as there is a summary of the total measurement at the beginning of each, it is quite easy to see when there has been an obvious mistake and when the measurement is accurate.

The routes in the south of England do not concern us at the present time. In regard to those going northward we have to note two separate roads proceeding towards Scotland, one passing by Boroughbridge, Catterick, and Bishop Auckland to Corbridge and Bremenium¹—a point twenty miles from Corbridge,—where it terminates; and a second route which branches off at Catterick, crosses the hills by Brough, Appleby, and Penrith, to a place called Luguvallium, generally recognised as Carlisle, and terminating at a spot twenty-four miles beyond, called Blatum Bulgium.² It is remarkable that the most northerly termini of the two chief Roman roads referred to seem to be at points only about twenty miles from the last station near the Roman Wall between the Tyne and the Solway. Many reasons have been given to account for the complete absence of the mention of any roads extending into Scotland, but the fact remains that no road north of the Cheviots is claimed by the Romans in their own documents.

In the Roman *Notitia Dignitatum*, dating from about the fourth century, are given the rank of the officers and the composition of the chief Roman garrisons in Britain.

After the departure of the Romans there is no literature giving any

¹ Bremenium is always associated with Rochester, near Catcleuch Reservoir, but the distance from Corbridge is six miles more than in the *Itinerary*.

² This remarkable name is generally believed to refer to the camp at Birrens, near Ecclefechan.

description of the routes in Scotland until we come to the document called Hardyng's *Chronicle*,¹ drawn up in the time of James I. There are several copies of the book, the most easily accessible of which is a transcript in Professor Hume Brown's *Early Travellers in Scotland*, taken from Ellis's edition.

Hardyng was a Northumbrian who had taken part in several incursions into Scotland, and appears to have been used by Henry VI. (cir. 1427) in connection with his claim to be Scottish overlord. While so employed he seems to have gone over Scotland, and in his *Chronicle* he describes what castles existed, and suggests what routes the King should follow in a plan of campaign.

Broadly speaking, it is a spy's narrative of what to do, what routes to follow, and what castles to beat down and towns to capture or burn. He tells the King to start from Wark and move by Duns to Dunbar and Edinburgh, and if he is content with that, to come back by "Dalketh a roode casell" and "bete down Edmoston² and Liberton in your waie." Thereafter by Newbattle, Lauder, and Earlston to Dryburgh, and "bete down Wetslade, Crosby, and Hume." After that he can deal with Berwick, Dunglass, "Colbrandespethe and Ennerwike."

On the other hand, if the King wants to do more, he advises the employment of three armies, the first working as above to capture Edinburgh, Linlithgow, and Falkirk; the second to invade by Jedburgh, Peebles, and Lanark; and the third to invade by Carlisle, meet the second at Lanark; the three thereafter to meet at Stirling, after which they are to sweep round by Ayr, Galloway, and Dumfries. Then if he wishes to capture all Scotland, he is to cross Stirling Bridge, capture Doune Castle, and then attack Fife, castle by castle, then Perth, Dundee, Aberdeen, and on by Moray to Inverness, and so to Caithness. With our knowledge of Scotland developed by railway travelling, it is easy for us to recognise that these routes are quite obvious; but this appears to be a very important document, and one we should not overlook in questions of the Roman occupation of Scotland, for these routes appear so eminently practicable and effective, noted at a time when knowledge of Scotland cannot have been very thorough. There are several pictorial maps of Scotland in these

¹ British Museum, Lansdowne MS. and Harleian MS.; Oxford, Bodleian MS. These manuscripts are of different dates and vary considerably both in their style and the details they give in regard to Scotland, although the general facts laid down are much the same. A concise account of Hardyng's work and schemes is given in *English Historical Review*, 1912, p. 462, but it does not deal with the geographical aspect of the Scottish section.

² Observe Craigmillar Castle is not named, which is puzzling, as the castle is generally believed to be earlier than the date 1427 which appears over the doorway.

manuscripts, one of which is reproduced in the National MSS.,¹ but as a cartographic production it is more interesting than useful, as it makes no attempt at being a map, its purpose being illustrative and decorative to the book.

III. THE FIRST SURVEYS OF SCOTLAND.

The earliest survey of Scotland that we know of appears to be contained in the manuscripts which Timothy Pont, a minister in Caithness, commenced about the year 1609. Up to that time such maps as existed were crude attempts to correct the errors of those in Ptolemy's *Geography*. Pont, however, seems to have begun his survey in a very primitive fashion, on small sheets of paper, and in putting these together the outlines had frequently to be remodelled to make them fit in with each other. The earliest of his maps seem to have been those of Sutherlandshire, the sketches being made, some from a boat, some from the hill-tops; but as he extended his work southwards, the outlines became more accurate with growing experience. Unfortunately these early drawings fell into the hands of a hopelessly incompetent would-be geographer, who, apparently knowing nothing of the districts, joined up maps of different scales and manipulated the outline utterly regardless of the inevitable result. These maps subsequently got into the hands of Gordon of Straloch, who took them in hand, in 1641 redrew with some draughtsman-like skill the uncertain outlines of Pont's Maps, and these along with some of his own were sent over to Amsterdam, where they were issued in Blaeu's Atlas of 1648.² The scrap manuscripts of Perthshire, however, which for some reason were not included in Blaeu's Atlas, passed into the Advocates' Library, where they are now carefully preserved. Some are manifestly original sketches, made by a surveyor according to some plan of his own; but as few of them have any scale, any geographer using them has to be very careful as to their interpretation. After being in the hands of the Gordons of Straloch, they were passed over to Sir Robert Sibbald, who made use of them and collected them with many manuscript memoranda, which latterly became part of the Macfarlane Geographical Collections. Although these maps are not bound up with the Macfarlane Manuscripts, the one belongs to the other, for many of the seemingly scrappy memoranda in the Geographical Collec-

¹ *National Manuscripts of Scotland*, part 2, plate lxviii.

² See Chambers's *Biographical Dictionary*, 1835, vol. ii. p. 468 (Gordon). Mr Chubb, Curator of Maps at the British Museum, states that the Scottish volume was not issued till 1654. The Introduction is dated 1648.

tions refer to some single maps, and titles written on the maps are the same as the headings of the descriptions.

From a cartographic point of view these maps form an exceedingly interesting study in map-drawing, because the most of the lines which editors have hitherto described as "unintelligible" are in fact the earliest attempt to show the mountains. There are three distinct methods—first, the wavy outline; second, the pictorial; third, the pimple. On the Loch Lomond sheet there is a very interesting representation of the twin peaks of Ben Lomond and the jagged outline of the Cobbler (fig. 2).

The next maps of Scotland, adding considerably to our knowledge, are the beautifully drawn maps of Central Scotland, attributed to Robert Adair about 1680.¹ They are all on a good large scale, and for the Lothians practically displace the older maps of Pont and Gordon; and as the scale is nearly one inch to the mile, they are very serviceable maps for showing the Lowlands at that period. The roads and bridges are very accurately shown, and these maps form a distinct advance in map-drawing, both in accuracy and fineness of execution of detail. They are, in fact, the first good road-maps of the south of Scotland.

The next atlas of Scotland, based upon the surveys of the previous geographers, is Moll's *Atlas of Scotland*, published in 1725, and it puts in handy form the chief features of the larger maps, with some roads roughly drawn in, but the source from which these were obtained is not clear.²

Between 1720 and 1750 a good many local maps were issued, the earlier of which were copied from those of Adair. Quite a number of these were published between 1730 and 1740 by the engraver R. Cooper, who also issued special surveys of part of Argyllshire, Ardnamurchan, and the Caithness coast, but they are too local to be described as a fresh survey of Scotland.

IV. THE MILITARY SURVEY OF 1755.

It was not till 1745, when the military authorities were alarmed by the absence of satisfactory maps for their officers, that a real survey of Scotland was begun. The military authorities therefore undertook the preparation of a great survey of Scotland, and after many years' labour

¹ The Map of Ettrick Forest credited to Adair is almost identical with one attributed to Gordon, and is of such a different character from Adair's other maps, that some further explanation seems desirable.

² "A History of Old Scottish Road Books," by the writer, was given in the *Motor World*, July 10, 1913.

the map was revised up to 1755, and a good many of the manuscripts from which this map was compiled now lie in the British Museum. Through the kindness of the authorities access has been readily given to the eighty-four uncatalogued rolls, and photographs of many of them have been taken, in case any accident should befall the originals. Most of the original rolls relating to the south of Scotland never reached the British Museum, but there is a complete transcript of the whole of Scotland and some duplicates on a smaller scale which are always available for reference. These maps are sometimes called the "Duke of Cumberland's Survey"; sometimes, "General Roy's Survey"; but it is very doubtful if the latter title is correct. They were used by Ainslie for producing some county maps in 1770, but the originals have never been reproduced on their full scale. They are on twice the scale of the present Ordnance Survey, being one mile to two inches, and it is rather remarkable that maps of such great topographical value do not appear to have been much consulted or referred to. The maps show no county or parish boundaries; they are purely road-maps with finely executed hill-shading. There appear to have been a number of copies made, but which are the originals and which are the duplicates I cannot say as yet.

The maps in the years following this great survey appear to have been very largely compiled from the reduced editions which were available, and there were practically no new surveys of the country of any fresh value except the various county maps which were issued between 1770 and 1820.

The next complete survey of Scotland was Thomson's Atlas, published about 1823, which gives in very portable form a really excellent survey of the whole of Scotland, copied mostly from estate plans, and this map continued in use until the advent of railways almost wholly drove out of existence maps and road-books of every kind. The Government Ordnance Survey of 1856-1887 superseded, in turn, the whole of the previous maps, and it now forms the basis of all modern maps of this country, and gives a true record of all the roads and paths in Scotland at the date of issue.

Having thus reviewed the chief surveys of Scotland, it is perhaps only necessary to say that practically only five distinct epochs are of use in ascertaining the changes that have occurred in the country, and these appear to be—Pont's Maps, 1610-1640; Adair's Maps, 1680; the Military Survey of 1755; Thomson's Atlas, 1823; and the Ordnance Survey, 1860. In putting aside the others, it is necessary to remember that from a geographer's point of view it is important to know which are original surveys and which are copies. An immense number of maps of Scotland were issued between 1730 and 1830, and it is very difficult at first sight to

distinguish originals from improved editions of earlier surveys, especially as no catalogue exists for such a purpose, nor is there a general collection anywhere accessible. The only maps that are of real value, from an antiquarian point of view, are those original manuscript surveys which give definite dates for definite points. Cooper's Maps, for instance, dated 1730, are of little service to us, because they are modified copies of Adair's Maps of 1680, and for this reason it is absolutely necessary to put aside a large number of maps as being of little service, simply because we know they are not original.

Therefore, in making use of these maps in seeking to trace the course of the old roads in Scotland, one is able to follow with considerable accuracy the main lines of roads in each period by eliminating from the Ordnance Survey of 1860 the roads which do not appear on each previous survey.

It is rather unfortunate that in Blaeu's Atlas there is only one sheet on which the roads have been shown, but a very fair idea of their probable course is obtained from the positions of the bridges indicated on the maps. In point of fact, it appears to be perfectly clear from an examination of most of the sheets that the bridges were laid down on the map because they were used in connection with roads, and the surveyor had marked their positions for that reason and not simply because he was aware of their existence, as somewhere on the river, in that county.

The map given in Blaeu's Atlas with the roads upon it is that of the Lothians (fig. 3),¹ and from it we are able to get a general idea of the ancient roads approaching Edinburgh; but it is plainly not very reliable as to the roads, as the draughtsman seems to have had no sure knowledge of their course. Moll's Maps (1725) show the chief roads, all over Scotland, but the maps are not on a very large scale, while the straightness of the lines shows that the cartographer only knew of their general direction, rather than their true position.

On the other hand, the Military Survey of 1755 was for the distinct purpose of having an accurate survey of the roads for military use, and the surrounding country was filled in roughly. It is therefore a most satisfactory source to rely upon in any inquiry as to the old roads in Scotland, because it was completed at a time when the road traffic had begun to extend, and the new superior roads formed under the Turnpike Acts were only newly planned.

¹ Pont's Map of the Lothians seems to have been issued in some form about 1618, for it was issued in the Mercator-Hondius Atlas, 1630; re-issued in 1636; and again in Jansson's Atlas 1647. Blaeu omits Pont's name. I have to express my indebtedness to Mr Chubb of the Map Department of the British Museum for elucidating these facts, hitherto unknown.

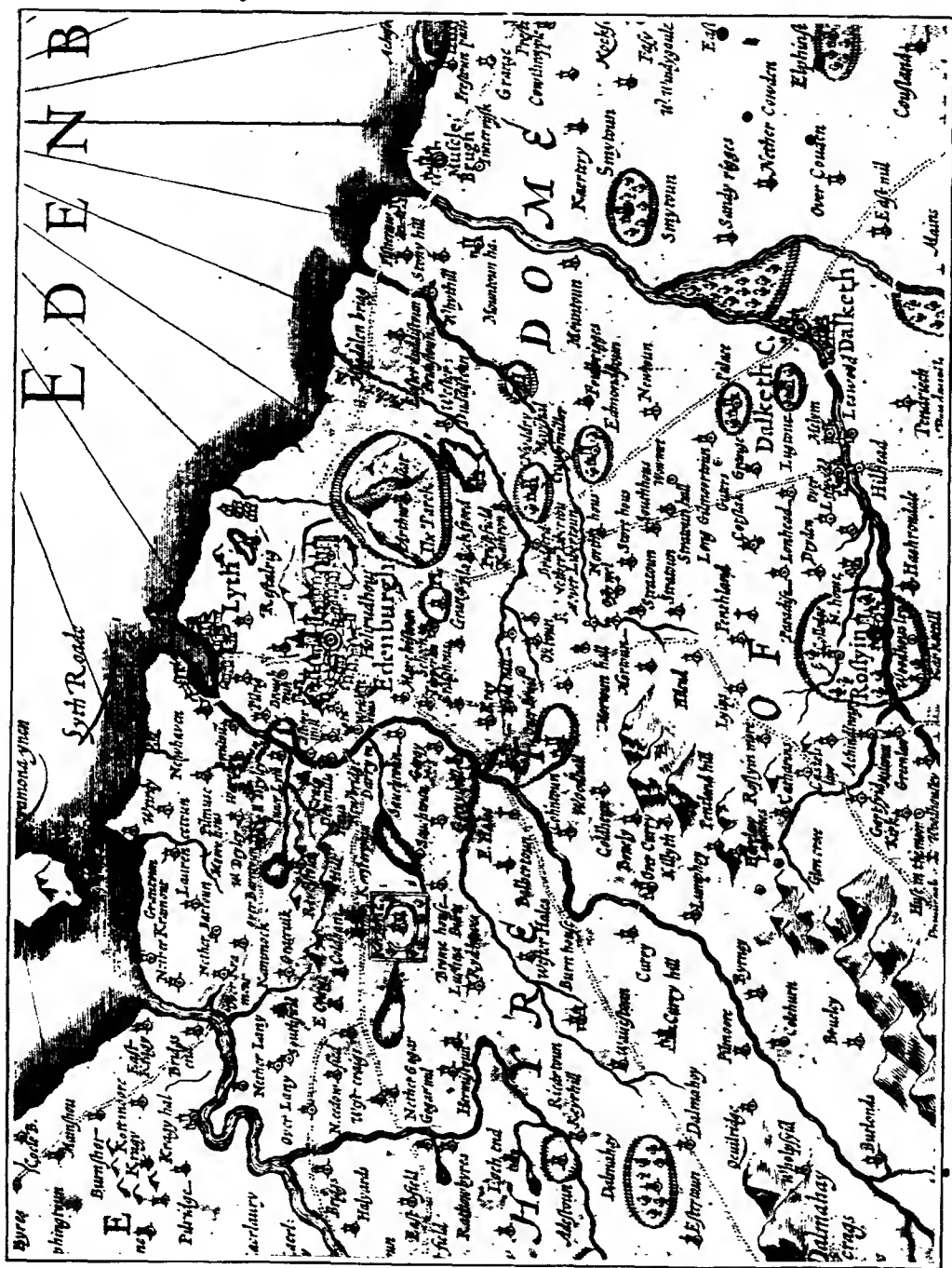


Fig. 3. Part of the Map of the Lothians by Pont issued in Mercator's Atlas, 1636, enlarged to the scale of half an inch to a mile. A map scarcely distinguishable from this was issued in Blaeu's Atlas, omitting Pont's name, and bearing Blaeu's name as the author. Blaeu's Map is recognisable by the "Dalkeith C." and "Palace" (on this map) having been scraped out on the plate and the blank never re-engraved.

In this map the military roads through the Highlands, constructed by General Wade and his predecessors about 1718, are the chief features; but in the south of Scotland, where there was no military road except the one from Dumfries to Portpatrick, this survey gives us a very accurate idea of the highways about 1755.¹

V. OLD CENTRES OF POPULATION.

Having thus reviewed the older surveys, it is obvious that in each epoch the roads through the country would be formed between the chief centres of population, therefore in the pre-Roman period of the towns named in Ptolemy's *Geography* we must expect that some style of track would exist between the chief towns of each tribe. Thus in the six-town group of the Damnonii² there must have been considerable intercommunication, while in the four-town group of the Selgovæ³ the same would hold good.

It is exceedingly unfortunate that the reading of Ptolemy's *Geography* so far leaves us in the dark as to the identification of any place in Scotland. But that trackways of some kind existed there can be no manner of doubt, and if we were only able to locate the town groups, the course of many of the ancient roads would be easily found.

After the departure of the Romans, and in the subsequent readjustment of the kingdom, we have to recollect that Southern Scotland and Northern England formed the kingdom of Northumbria on the East Coast, and on the West Coast the kingdom of Strathclyde, so that the intercommunication in these districts must have been extensive.

In the tenth century the connection between Durham, Coldingham, and Melrose was very close, and in the eleventh Malcolm Canmore's jurisdiction seems to have extended far south. In 1329,⁴ in a reference to Haydon Bridge, near Hexham, the "Scotia Via," which must be the road over the Cheviots, is referred to. On the west side of the Cheviots in 1304 the "old way of Roxburgh" is mentioned in a document,⁵ and one is inclined to believe that this must have some connection with the "Wheel Causeway," which passes the head of Liddesdale and leads to Jedburgh or Ruberslaw. In 1305 we have the curious note in the *Calendar of Documents relating to Scotland*⁶ that a

¹ The date of the survey is fixed by the note on sheet 184, "Last survey of the ground near Fort George, Fife, etc., 1755." The survey is catalogued in the British Museum as 1747 to 1755.

² Colanica, Vandogara, Coria, Alauna, Lindum, Victoria.

³ Carbantorigun, Uxellum, Corda, Trimontium.

⁴ *Chr. Lanercost*, 259.

⁵ *Calend. Doc. Scot.*, 1304, 423.

⁶ 451.

man is appointed for eight days to guard the road over Minchmoor for fear of robbers at Roxburgh Fair. About 1230, among the Coldingham Papers¹ is a reference to Crhachoctrestrete, which one imagines has some connection with the road between Coldingham and Dunbar, while in the Kelso Charters² the road from Risebrig to Inuerwick is referred to about 1240. It will be observed that in each case we seem to be dealing with roads among the hills not at present in use, showing that at that time—in addition to Dere Street, which will be referred to later—there was a series of important highways of considerable antiquity in the hill country in the south of Scotland. Whether Edinburgh had at that time the importance that it subsequently attained is a subject which is not fully understood, but one has the impression that, as the Royal residence was moved from Scone to Dunfermline and from Dunfermline to Edinburgh, the centre of Scottish national life drifted southwards, and the pre-eminence of Edinburgh coincided with the moving of the Court. It is therefore quite probable that the most ancient roads in Scotland did not at first lead to Edinburgh, and that it was only about the time of Malcolm Canmore that this city began to attain the importance which caused the traffic to converge to it, and lifted it to the level of the chief city in Scotland.

VI. THE "ROMAN" ROAD—DERE STREET.

It would be impossible, in a short review of this kind, to treat in detail of all the roads leading to Edinburgh, and I propose therefore to deal with a few of what seem to be outstanding points of interest, the elucidation of which is assisted by the maps referred to. First of all comes the Roman road from England into Scotland. Perhaps the most important of the northern highways—No. 1 in the *Antonine Itinerary*—was the Roman road which passed by York to Aldborough, Catterick, Bishop Auckland, and Corbridge, to Bremenium. Thereafter it was supposed to have made its way over the Cheviots by Jedfoot to Newstead, and thence by Lauder to Edinburgh. It has always been regarded in its entire course as a Roman road, but in the *Antonine Itinerary* the last station is Bremenium, twenty (Roman) miles from Corbridge, and therefore apparently about ten miles short of the Scottish Border. It is therefore very remarkable that at this point the road changes its character, for instead of driving over hill and dale in a series of straight lines, as is Roman custom, it changes into a ridgeway (fig. 4) of a similar type to the Icknield Way,

¹ Raine's *Durham*, App. 13. The spelling of this name suggests a misprint either in the original or in the copy.

² 203.

in the south of England, and winds along the surface in the driest position. Eight miles beyond the Chew Green Camp it bends sharply round, and follows a general course heading for the Eildon Hills (fig. 5). It crosses Lilliard's Edge, and at St Boswells disappears. After that point its course is entirely conjectural. Under the name of Dere Street we are supposed to meet it again near Lauder; yet here again we find it

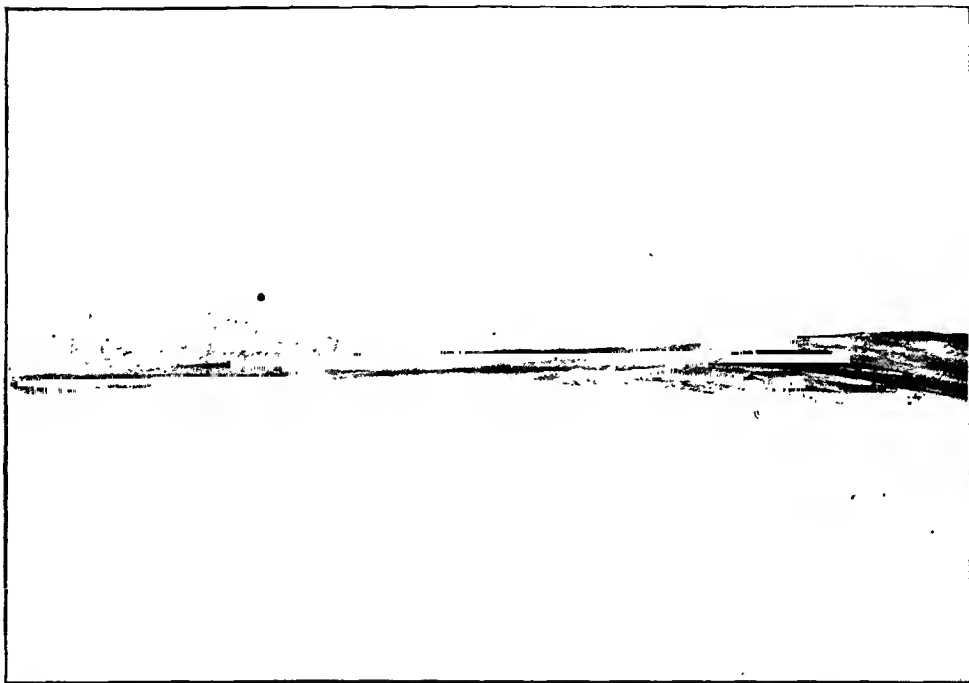


Fig. 4. View looking SE. from Shilden Hill, showing the grass-grown road turning along the ridge to the right, subsequently crossing the border into England behind Woden Law in the central distance.

wending its way over Soutra Hill, following the driest surface, and not in the straight line of a constructed Roman road. After Pathhead we again find a straight line over the hill to Dalkeith, but beyond that its course appears to be lost.

It is rather remarkable that no documentary evidence has so far come to light indicating the position of Dere Street between St Boswells and Lauder—a distance of ten miles.

Turning to the Military Survey of 1755 to find the course of this road, it is distinctly disquieting to discover that while it is shown on the English side of the Cheviots near the Border, its existence beyond, in

its present course, is ignored. Whether this is owing to its having been impracticable from a military point of view, is entirely a matter of speculation; but one would have imagined that if such an important highway between England and Scotland existed, it would have had a place upon this map.

Looking at the course of this road over the Cheviots, one begins

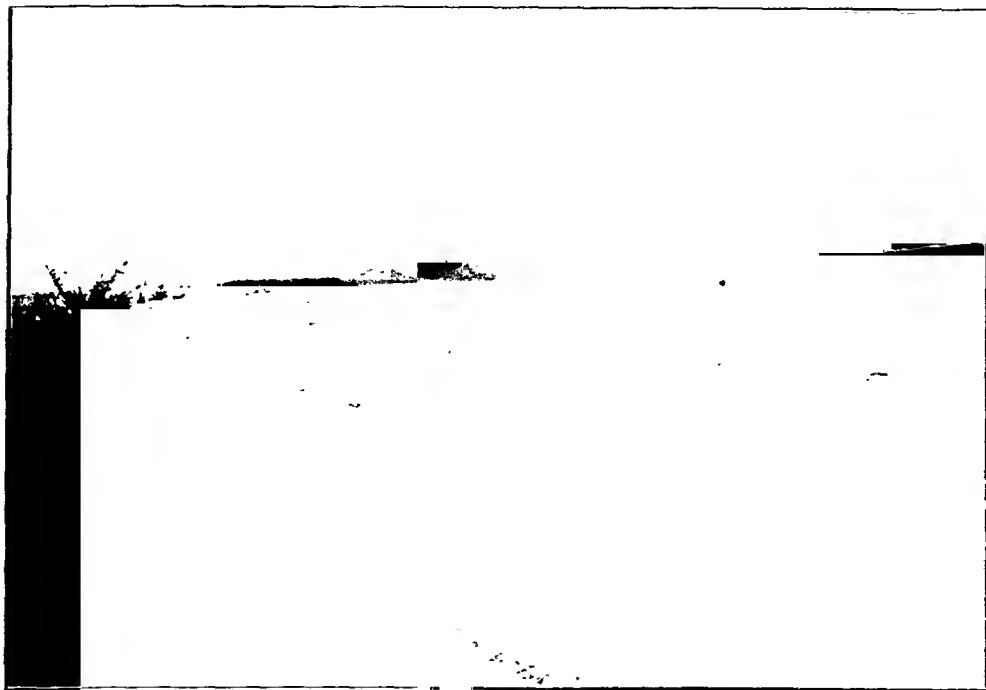


Fig. 5. Looking WNW. from the hill above Jedfoot, showing the road heading straight for the Eildon Hills.

to wonder what authority there is for calling it "Roman." There are many ancient highways in Scotland which follow an almost straight line, yet no one dreams of calling them "Roman." It is therefore desirable to ponder for a moment the pros and cons of this matter. We may take it as certain that the Romans would first of all use the native tracks in their progress, and in the military occupation of the country would place their permanent camps in *close proximity* to the large native centres of population, as a means of overawing them. In this way we may assume that if the Romans constructed a road, it would be close to a native track; and we imagine if the latter was sufficiently direct for

their purpose, they would not trouble to build a special road, provided the foundation was firm and the trend of it otherwise suitable.

We may also assume that it would only be when a country was well consolidated, and rapid means of transit specially desirable, that great trouble would be incurred in preparing a special highway; therefore the Roman occupation of Scotland being of a precarious nature as compared with the firm holding of England south of the Roman Wall, the chances of any road being made far into Scotland are very problematical, and the termini of the Roman roads as given in the *Antonine Itinerary* may be the farthest points to which they drove their *special* roads. One of the best tests of a true Roman road, that does not seem to have had much attention directed to it hitherto, is that the constructed Roman roads, as far as possible, did not pass *through* the native villages, but pursued a line of their own, pointing to a definite destination. For instance, in Yorkshire and Durham the Leeming Lane, between Borough-bridge and Bishop Auckland, if deleted from the map, reveals the curious fact that most of the villages and parish churches, which we may assume to be very ancient sites, are not on the Roman road, but lie on rising ground some distance away on either side, and are connected with each other by regular roads, so that the natives of the district, passing from one village to another, have no occasion to use this Roman road. In modern times it was for this reason that Leeming Lane, after the discontinuance of the coaches, remained an almost deserted highway until, first, the cyclists, and then the motorists from Glasgow, Edinburgh, and Newcastle, used it on their way to London, and at the present day one meets hardly any other traffic. This conclusively shows that it was constructed for the rapid movement of troops or vehicles of some kind, and not for local traffic between the centres of population. As this road continues northwards, we find it taking an undeviating course to Bishop Auckland, after which it swings round and makes straight for Corbridge; then it makes straight for Rochester, and a few miles beyond that it joins another track, coming from Rothbury, and makes its way along the ridge.

In these circumstances, looking to the marked distinction in the type of road in England and Scotland after the last Roman station of the *Itinerary* is passed, one cannot but think that what we call the "Roman" road into Scotland may have been a far earlier native highway (probably between Rothbury and the Eildons) which the Romans appropriated as sufficiently direct for their purpose. The antiquity of the track coming up from Rothbury, as well as of the "Roman" road joining it, stands almost unquestioned, as in both instances these roads form parish boundaries for long distances; but the manner in which they keep to the

dry surface of the hill—contrary to the fashion of the Roman roads in the rest of England, and even when on similar ground in Northumberland—is a fact which cannot be ignored. We are therefore face to face with the question whether, when in ascribing many roads to the Roman occupation, we are not overlooking the works of the earlier inhabitants and withholding honour where honour is due.

It is quite possible that there may be many lengths of Roman road in Scotland, but many of those now called by that name are probably no more than the beaten tracks of the native population which the Romans made use of, or they are short connections linking up their military system. In fact, they might be called, with justice, semi-Roman roads, or Brito-Roman roads.

It is for this reason that one feels the hopelessness of tracing beyond Newstead the Roman road farther into Scotland, and no doubt explains the absence of what would be called a typical Roman road leading to Lyne Camp. The Roman occupation may have been far less comfortable for the invaders than we imagine, and the Roman camps that have been found may be no more than solidly built outposts holding a very precarious existence in a hostile country.

From Newstead onwards to Lauder one is faced with the interesting problem that as the villages on the Leader Water,—Redpath, Earlston, and Boon,—are all on the east side of the river, it is quite unnatural to expect that the main road would pass up the opposite side of that river, where there are no villages. The military map makes this quite definite, for the road is shown leading round by Melrose to Blainslie and Lauder (fig. 6); and as we read of this same route being used in 1547,¹ in taking back the heavy cannon from an expedition to the south of Scotland, we may take it that this is a very ancient highway. It was, in fact, the earliest road to Selkirk, and explains why Darnick was the meeting-point of two factions in 1526. This ancient road continued over Soutra Hill in the manner previously referred to, with something of the character of a native track; but after Pathhead it resumes a direct course once more, and, passing over by Chester Hill till within a mile of Dalkeith, it then turns aside again and, following a winding course, proceeds past Dalkeith, Sheriffhall, and Little France, on to Edinburgh.

There is, however, one very remarkable feature which I have been unable to comprehend. At the point where the road, hitherto straight, bends off to Dalkeith, the parish boundary, which followed it previously for a short distance, continues straight forward; and, moreover, the Ordnance map seems to indicate portions of an almost straight road

¹ *Lord High Treasurer's Accounts*, vol. ix. p. 93.



Fig. 6. Melrose district—Military Survey of Scotland, 1747-55.
Reduced to the scale of one inch to a mile.

The bridge shown over the Tweed at Melrose was erected just about the time of the Survey, and was washed away shortly after.

proceeding by Newton Church and Woolmet to Craigmillar Castle, as if there had existed at one time a perfectly straight road the whole way. This road may be that referred to in a charter of the time of David II.,¹ where a way called "the road of the Standing Stone" is alluded to; and this appears to be a point worth investigation.

THE ROAD FROM BERWICK.

As the town of Berwick in mediæval history was occasionally in the hands of the English, occasionally in those of the Scots, and as it was at one time the largest town on the coast, its geographical position caused the use of the roads from it to be a matter which varied with its ownership. For while the chief towns on the road to Edinburgh were Coldingham, Dunbar, and Haddington, the deep defile of the Pease at Cockburnspath created a formidable obstacle to the traffic between Coldingham and Dunbar, and the range of hills that intervened farther south hindered any other route being adopted.

In connection with this part of the road, it has to be recalled that the road over the long stretch of moorland between Cockburnspath and Ayton can have had little local traffic in mediæval times, and must always have been left in a state of nature when traffic from Dunbar to Berwick ceased for any lengthened period. We have to note also that Edward III., flying to England after the battle of Bannockburn in 1314, found it advisable to take a boat from Dunbar to Berwick. Though this points to the road being in a disused state, yet the Abbey at Coldingham must have had some sort of access to it from Dunbar, and therefore one is inclined to think that on this occasion there must have been some undisclosed reason for this step.

There was, however, an alternative way to Edinburgh from Berwick caused by the traffic to Duns and Lauder, and in regard to distance it was only about three miles longer than the road by Dunbar, which, owing to the curve of the coast, is not as direct as imagined. This road does not appear to have had a very marked course between Duns and Lauder, and as the summit at Soutra was 1290 feet above sea-level, its use would be greatly restricted in winter.

When the invading armies of England were working with their supply ships, they seem to have kept by the coast route, and the Somerset expedition of 1547, which led to the battle of Pinkie, and Cromwell's invasion of 1650, both followed the coast road; but, as a matter of fact, in the other invasions, the choice of route seems to have been decided largely by the possession of Berwick, Hume Castle, and

¹ *Reg. Dunfermlyn*, 265-384.

Roxburgh Castle. On the other hand, the Scottish invasions of England almost all seem to have followed the Soutra route in the historic periods of which records are available;¹ prior to that the nebulous statements leave much to conjecture, but the Soutra road seems to have been almost a national highway.

The coast road from Berwick traversed a route almost direct over the hill to Ayton (where it crossed the present main road), thence followed an almost straight line to Cairncross and Old Cambus, and descended close to the water's edge at the mouth of Pease Burn, where there appears to have been a small bridge.² In 1617 the Privy Council Records speak of great repairs on this road between Ayton and Cockburnspath, for the King's visit to Edinburgh. The ravine at this point always seems to have been a military obstacle, for both the Somerset expedition of 1547 and Cromwell in 1650 had great difficulty in finding a method of crossing this defile, which was guarded at one side by Cockburnspath Tower, and further away by Dunglass Castle. The road at this point was greatly improved by the opening of Pease Bridge³ in 1782, which, avoiding the steep descent to the sea coast, brought the road round by Cockburnspath Tower to Dunglass. This in turn became an almost abandoned route by the opening of the present route by Grant's House about 1805.⁴

There are the remains of an old bridge below Cockburnspath Tower which popular tradition attributes to Cromwell, but its history is quite obscure, and it has no features left which would determine its date. The impression one forms is that, as there appears to have been no early road at that point, it must have been a service bridge over the river constructed by the owner of Cockburnspath Tower.

After Cockburnspath the road kept nearer the coast than the present road, and the old bridge over the Dunglass Burn—almost totally remodelled—can still be seen. Thereafter the road does not seem to have changed in any way as far as Dunbar.

After Dunbar, the road followed its present course as far as East Linton; a mile farther on it turned up the hill, past Beanston, and then pursued a fairly straight course, leaving Haddington far below in the valley, onwards to Seton House, which was one of the most prominent houses of the nobility of the sixteenth century. Thereafter it went

¹ In 1496 a curious route by Haddington and Cranshaws was taken. *Lord High Treasurer's Accounts*, vol. i. p. 299.

² Blaeu's Atlas, 1649, probably a short-lived wooden affair, as it is not referred to anywhere else.

³ Begun 1779.

⁴ 27 Geo. III. 89, 45 Geo. III. 56. These and the following Acts of Parliament do not, as a rule, refer to specific parts of the road, but create tolls in order to raise money for their necessary repair.

through Preston, and followed a course, not passing through Musselburgh, but halfway between Musselburgh and Inveresk. It then crossed the old bridge at Musselburgh, supposed to have been built by one of the Setons, probably 1520-1530.

One has to remark, in connection with this road between Dunbar and Musselburgh, how the town of Haddington seems to have been avoided, for almost all the early travellers and records mention the river Tyne being crossed at East Linton. One would have thought that the most natural route would have been to keep up the same side of the river, past Traprain Law, and cross the river at Haddington. The present sharp turns in the road at that burgh show how completely the town was off the main line of traffic. The only suggestion one can make is that, such burghs having power of toll, travellers avoided passing *through* them, and thus we have the loop road outside Dunbar, the road avoiding Haddington, and not passing through the main street of Musselburgh.

Dealing with the other routes from Berwickshire *via* Lauder, that from Duns to Westruther and Lauder seems to have been a fairly old route, and in the Turnpike Act of Repair 1803¹ it is described as in bad repair and often impassable. The road from Coldstream by Greenlaw was formed into a main route from London to Edinburgh by the completion of Coldstream Bridge in 1766, and the powers of the trustees ended at the Deanburn, at the foot of Soutra Hill (north side).² The road which joined in from Kelso at Whiteburn was formed in 1799.³

THE ROAD FROM KELSO.

As Roxburgh Castle was one of the chief fortresses on the Scottish Border, and a stone bridge leading to it was erected across the Tweed in 1330, there must have been a very ancient road between it and Edinburgh. The old route from Kelso does not appear to have been changed, except for the diversion of the road outside the Floors Castle policies, but from Smailholm to Lauder extensive variations have taken place.

The most ancient road seems to be one which passed almost straight from Smailholm to Legerwood, and going close by Boon, passed up the valley of the Leader, on the east side of Lauder,⁴ to Oxton. In the middle of the eighteenth century this route appears to have been mostly

¹ 43 Geo. III. 19.

² 33 Geo. II. 56.

³ 39 Geo. III. 3.

⁴ The locality of the Wooden Bridge of Lauder, at which Cochrane was hanged in 1481, is not very clear. The present bridge is of a type common about 1830-40, and superseded an older bridge at the same spot, seemingly erected about 1765. Blaeu's Atlas (1649) shows no bridge over the Leader at Lauder.

abandoned in favour of a later road, which passed by Birkenhead, crossed the Leader at an old bridge¹ near Blainslie, and then made its way up to Lauder; but this would appear only to have been put in order by the Turnpike Trustees, under the Act of 1766.² The Military Survey of 1755 indicates that there was also a road straight from Smailholm to Earlston. The present road from Kelso by Nenthorn and West Gordon was constructed about 1799.³ Judging by the maps, there appears to have been an old service road all the way up the Leader valley on the eastern side, following a higher level than the present road. In all likelihood this would be the road from Dryburgh, yet it is remarkable that no mention appears in any old documents of a road leading to the Abbey.

The main roads from England *via* Berwick, Coldstream, or Kelso seem to have been the only roads in extensive use till about 1830, when the present road was formed over Carter Fell. Previously the old road over Carter Fell from England seems to have been used for little else than local traffic, mostly from the collieries in North Northumberland.

THE ROAD FROM JEDBURGH.

According to the Military Survey in 1755, the old road over the Cheviots followed to some extent the Roman road from Rochester, and after Coquethead followed a line, of which scarcely a trace remains, by Middlesknowes and Mossburnford to Jedburgh. From Jedburgh⁴ it must have crossed the hill over to Ancrum Bridge, and then followed the present line to Melrose. There it crossed the Tweed at a bridge close to Gattonside House,⁵ and then struck up the hill (by what is now a grass road) past Easter Housebyres, thence by Bluecairn and Blainslie to Lauder. Thereafter it went straight to Oxton, Channelkirk, and Fala, and following Dere Street—referred to in a previous part of the paper—passed on to Dalkeith.

The present line of road from St Boswells, by Kedslie, direct to Lauder, on the west side of the Leader does not appear to have been of very great antiquity, as it is not shown on the military map of 1755,⁶ so that the view that it was a Roman road would appear to require more

¹ The upper of the two bridges.

² 6 Geo. III. 73.

³ 39 Geo. III. 3.

⁴ There is no road marked as going north out of Jedburgh to St Boswells, though Ancrum Bridge is shown.

⁵ This bridge was only erected about 1755, and was washed away a few years afterwards. The grassy mound of the abutment on the north bank of the river is still visible. The military movement southwards in 1745, when Prince Charles sent one section by Peebles and the other by Kelso, was limited by there being no bridge then over the Tweed between Berwick and Peebles. Kelso Bridge, built in 1751, was the first to be constructed after that period.

⁶ There is a tradition that the contractor was making this road when his horses were annexed by the Highlanders passing this way in 1745. Thomson's *Parish of Lauder*, 1903, p. 216.

confirmation than the mere assertion that it was so. The bridge at Leaderfoot, constructed in 1776-1780 to replace the ferry known as the "Fly" Boat, gives us some indication of the date when the road came extensively into use; and as the old bridge across the Leader at Earlston was only erected in 1755, and the new one in 1855, it is easy to recognise the date when the road on the west side of the Leader, by Kedslie, was abandoned in favour of the present road by Earlston.¹

From Lauder onwards over Soutra Hill the present road would appear to date from 1832; the grassy road which comes into view on the ascent of Soutra (from the south) apparently dates from 1793; while the road on the other side of the river, by New Channelkirk, which is seen coming up steeply, and crosses the road at right angles, may date from about 1760, when the Turnpike Act was secured.² Neither of the roads over Soutra, by Hunter's Hall, are shown in the Military Survey of 1755.

Considerable speculation has arisen as to the course of the Girthgate, the Sanctuary road from Melrose to Soutra, and it is generally believed to have taken a course past Threepwood and Threeburnford to Soutra. This is the course assigned to it by the oldest inhabitant of Blainslie at the present time (1915), but it seems remarkable that there is no documentary evidence of its course.

In the charters of both Dryburgh and Melrose there are references to "Malcolm's Rode"³ in a locality not identified, but presumably near Lauder. It is generally understood from the context that this means a road of some kind, but whether it was another name for Dere Street or the Girthgate, is not yet clear. This is probably the only road in early Scottish history of which the maker's name is known.

THE ROAD FROM HAWICK AND SELKIRK.

The road between Hawick and Selkirk followed in its ancient course a comparatively straight line over the hill by Ashkirk—the first Turnpike Acts altering its course being those of 1768 and 1771. From Selkirk onwards to Galashiels the present road dates from 1832, but from Galashiels onwards, up the Gala Water, the road by Stow, Heriot, and Fushie-bridge to Eskbank was laid out in 1818. Let it be recalled that Galashiels, about 1750, was a place of so little account that when the "new" turnpike road to Edinburgh from Selkirk was laid out about 1755, the route chosen was by Fernielea, Clovenfords, and the *west* bank of the Gala

¹ The road from Lauder to *Nether* Blainslie led to Kelso; to *Upper* Blainslie led to Melrose. ² 33 Geo. II. 56.

³ *Liber de Dryburgh*, p. 83 (*circa* 1230), "*inde per Malcolms rode*." On the other hand, the words may mean Malcolm's rood or cross; but the "*per*" of the text seems to favour the other reading, as does that of *Liber de Melrose*, vol. i. p. 230.

Water, leaving out both Stow and Galashiels altogether. Prior to that date the main highway from Selkirk to Edinburgh was by Darnick¹ to Lauder, and as this route was used for transporting cannon in July 1547, it was evidently the only alternative main route to Edinburgh, other than by Peebles.² It is rather interesting to note that on the same occasion some cannon, brought from Peebles, were not taken direct to Selkirk, by Minchmoor, which was the usual way, and, in fact, a turnpike road as late as 1772, but were brought round by Darnick. The river Tweed was evidently forded there, as it is unlikely the wooden bridge at Bridgend would bear the weight.

THE PEBBLES ROAD.

The present road from Peebles is the original road up the Eddleston Water; but at Eddleston the earliest road crossed the river, and, keeping up on the hill (above the railway), crossed the present road at Craighburn, and passed a little east of Leadburn on to Howgate, thence by Auchendinny on the line of the present road, to Edinburgh. A branch turned off at Howgate, leading to Penicuik, but was not used as a through road.

The present road by Penicuik to Leadburn dates from 1812, and the continuation to Eddleston from about the same time, with the exception of the later improvements which cut out the curves about a mile south of Leadburn.

THE BIGGAR ROAD.

As this was the chief road from Lanark, Dumfriesshire, and the south-west of Scotland, it is probably almost as ancient as the one by Lauder. The towns on it were few, but it appears in history continually, and in the Covenanting times was used when the prisoners were marched to Edinburgh. Its course up the Enterkin in Dumfries-

¹ The position of the wooden drawbridge over the Tweed at Bridgend near Darnick, which has long since disappeared, presents some interesting problems, rather negative in character. Being two miles away from Melrose Abbey, it was plainly not for the convenience of the Abbot, and this also makes the popular supposition, that the Girthgate led from it, extremely doubtful. Its erection is attributed to the Pringles of Galashiels, who in the fifteenth century for long periods held in their family the office of "Ward, or Ranger, of Tweed." It would therefore appear that the bridge dues would be taken on traffic to Selkirk, Hawick, and Jedburgh, which would all come from Lauder by this route. As the ferry was in use in 1590, it is very probable that the bridge was destroyed in 1544, when Melrose Abbey was burned by the English.

² There was a road of some kind from Bridgend (Darnick) straight over the hill to Stow, after which the track proceeded up the Gala Water, crossing and re-crossing the stream as convenient, until it reached the summit, when it descended to Borthwick and passed Stobhill on the hill above Gorebridge. It is not referred to by any of the early travellers, or in early documents, but its course is clearly marked. I expect the roads from both Lauder and Peebles were causewayed in parts, while this one would be a grass road.

shire is clearly shown on the Military Survey, but it follows the east side of the glen, while the present footpath follows the west. Its use was considerably assisted by the construction of Clyde's Bridge, near Abington, about 1661—the only point between Dumfries and Edinburgh where a large river had to be crossed. After Dolphinton, it appears on the earliest maps to have followed a course some distance west of the present road, made in 1831. It can still be followed past Lynedale,¹ about half a mile higher up than West Linton, and its great width testifies to its antiquity. At Carlops a very small bridge shows its old course, and the Nine Mile Burn Inn—a little off the present road—shows its course in 1755. A little farther on it merges into the present road, but if we read rightly the route marked out on Blaeu's Atlas, there was an earlier road which passed Rullion Green² close beside the Covenanters' Memorial, and kept considerably to the west of the present road, and higher up the hill at Hillend. At Bow Bridge one of the early little bridges is still visible at the side of the present structure, beyond which the road kept up the hill behind the present Police Station and thence made its way past the Buckstane at Morton Hall Golf Course, and following Morningside Road came to Edinburgh at the West Port.

THE ROAD FROM LANARK.

On account of the comparatively uninhabited character of the district between Carnwath and Balerno, the road by Dolphinton appears to have been the usual highway in early times, but there seems always to have been a way of some kind across the moor by Harburn and Cairns Castle. This route has hardly varied in any respect from its original line, and continues to be in its present state the original moor-road to Carnwath. In Adair's Map (1680) it is not marked.

THE ROAD FROM HAMILTON.

We must never forget that the rise of Glasgow as a city, and the consequent overshadowing of its early rivals, has tended to confuse our ideas of the relative importance of the different roads from the west, but the road by Mid-Calder would appear from its type to have been one of the very ancient roads leading to Edinburgh. From Hamilton, the road which at first went round by Bothwell was changed by the construction of Hamilton Bridge over the Clyde in 1780, and subsequently

¹ The small bridge over the West Water, on the old road a mile south of Lynedale, has two dates on it, the older of which appears to be an anachronism.

² I consider this extremely doubtful, but place the fact of its possibility on record.

it was much altered near Shotts, but after Mid-Calder it is evidently an old native track following the ridge of the land the whole way to Edinburgh. At only one point—at the quarry, near East Calder—has it been diverted, otherwise it remains in its original state. We do not hear much of it in history, but it must have been a track formed in very early times.

THE ROADS FROM GLASGOW.

Although the usual highway between Glasgow and Edinburgh from the earliest times was by Kirkintilloch, Falkirk, and Linlithgow, there has always been some kind of road *via* Shotts or Bathgate. After Bathgate it followed a course considerably higher up the hill than the present main road, but kept through Uphall to Newbridge. Although the present Newbridge is dated 1794, the same name appears in Pont's Maps of 1609, from which we presume that it was the second bridge over the Almond, built subsequent to Cramond Bridge. From this point into Edinburgh the road does not seem to have varied in any way from its original course, and as it forms a part of the Kirkliston parish boundary, we may take it that it is of great antiquity.

The road from Glasgow by Kirkintilloch, Kilsyth, and Falkirk¹ being the same as that from Stirling after Camelon, is probably the most historic of the roads leading to Edinburgh, and from Falkirk to Linlithgow practically follows its original course. Between Linlithgow and Edinburgh one important change seems to have occurred between Winchburgh and Kirkliston, where the present road (*circa* 1810) keeps about half a mile to the north of the original road, which passed near Overton² and through Kirkliston. A mile beyond Kirkliston the river Almond had to be crossed, and it is a remarkable fact that this important road had a ferry boat until Carlowrie (or Boathouse) Bridge was built about 1760. It is rather curious that the farm of Brigs is close by, for, according to the *Diurnal of Occurrents*,³ which was written in the time of Mary Queen of Scots, it was at this point that Bothwell met her on the way to Edinburgh, and carried her off to Dunbar. Buchanan says the meeting took place at the "Bridge of Almon," and Birrel's *Diary*, also contemporaneous, says it was at the bridge of Cramont.⁴ When two contemporaneous documents each state that this event occurred at different points, it is very difficult to decide which of the two is the more likely to be accurate, but one is inclined to think that it was at Brigs. From Boathouse Bridge the old road

¹ The Macfarlane Manuscript (*circa* 1680) in one part mentions this as being the proper road to Glasgow.

² The small bridge in Ross's Plantation seems to belong to this road.

³ *A Diurnal of Occurrents*, p. 109.

⁴ *Birrel's Diary*, 1532-1605, p. 8.

followed its present line, but a little beyond Turnhouse Station it kept straight over the hill between East and West Cragg and rejoined the road at Corstorphine. This village does not appear at any time to have been upon the main road, but lay a little to the south.

THE ROADS OUT OF EDINBURGH.

The principal gates of Old Edinburgh (fig. 7) were the Netherbow, between the High Street and the Canongate (at the end of St Mary Street); the Cowgate Port, at the Pleasance; Bristo Port, at Bristo; and the West Port, at the west end of the Grassmarket. Outside the Netherbow the street called the Canongate led down to Holyrood, where roads branched off again. At the Netherbow, the road to Leith turned off through what is now the Regent Arch, and a road parallel to it led from Holyrood, and was called the Easter Road to Leith. From Holyrood what is called "The Fishwives' Causeway" led through the open meadows to the shore, where the road from Leith joined in, and crossing the Figgate Burn,¹ made its way to Magdalen Bridge and Fisherrow. At Jock's Lodge an alternative road to Musselburgh turned off through Easter Duddingston and met the other road at Magdalen Bridge, a mile short of Fisherrow. A road to Duddingston village also struck off at Jock's Lodge over the east side of Arthur Seat, just outside the Park wall. It is quite uncertain whether there was anything more than a path through the King's Park round by Duddingston Loch before 1700, as the descriptions are rather contradictory in this respect.

From the Cowgate Port a very ancient road led by the Pleasance and the Dalkeith Road to Bridgend, thence followed the line of the present road nearly to Dalkeith, where it passed through the village of Lugton—the road is still in use,—descending steeply to the bridge.

The road to Dalkeith by Gilmerton does not seem to have been in use as a through road before the building of Elginhaugh Bridge, below Eskbank, in 1797. Gilmerton was a village to be avoided, on account of the clannish nature of the colliers, and even up to the end of the eighteenth century its reputation was not good. The road to it seems to have branched off Causewayside at the Powburn (fig. 8), thence it crossed to Nether Liberton and Greenend; another road seems to have passed from Liberton Dams, past Liberton Church to Stenhouse,² and straight on to Gilmerton.

The road from the Bristo Port proceeded along the Causewayside to Liberton Dams.³ In its earliest course it does not appear to have gone

¹ Portobello was only in existence after 1760.

² Now a right-of-way.

³ South Bridge, Nicolson Street, Newington, and Craigmillar Park route was only opened in 1813.

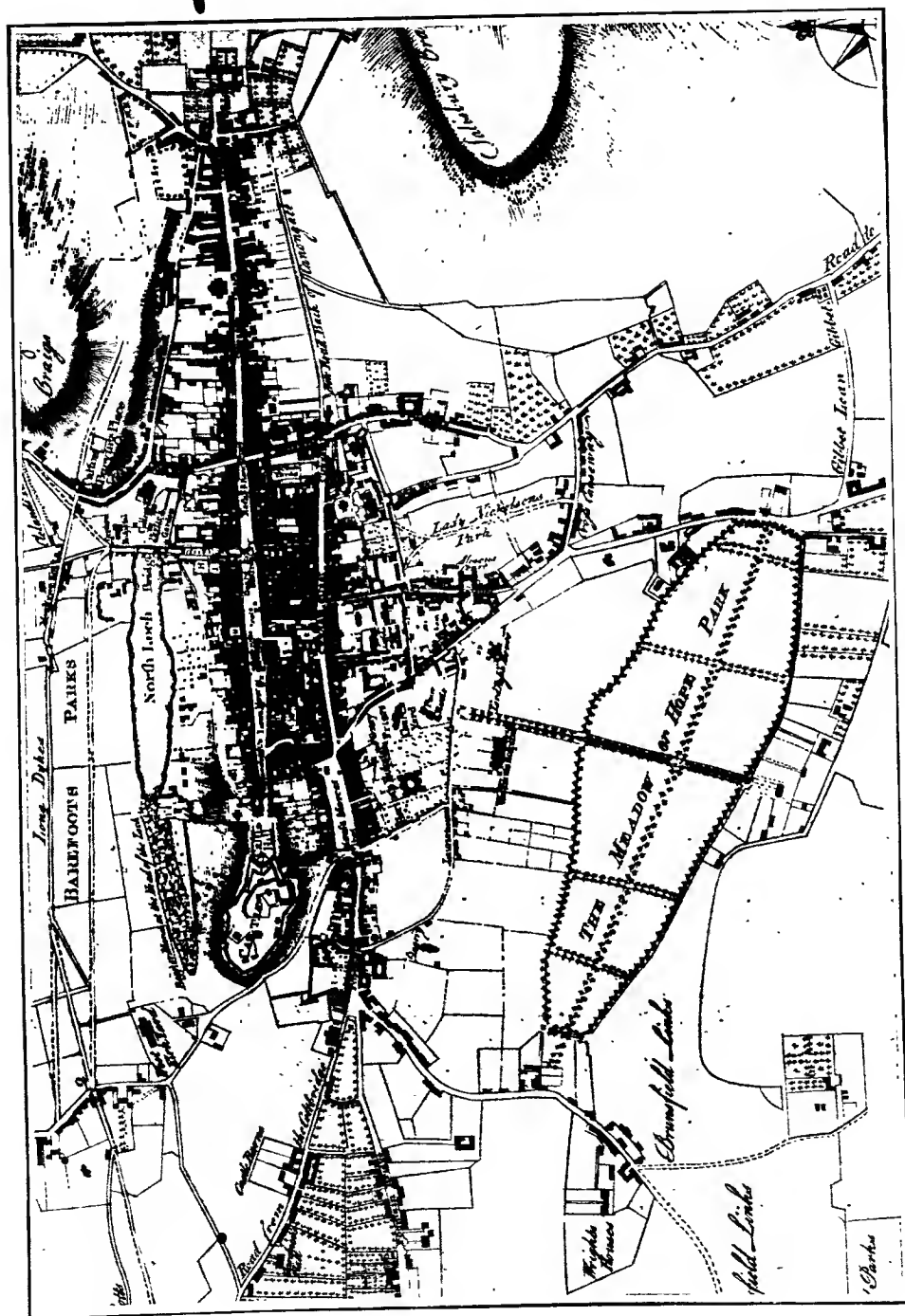


Fig. 7. Plan of Edinburgh, circ. 1765-70. Scale 44 inches to one mile.

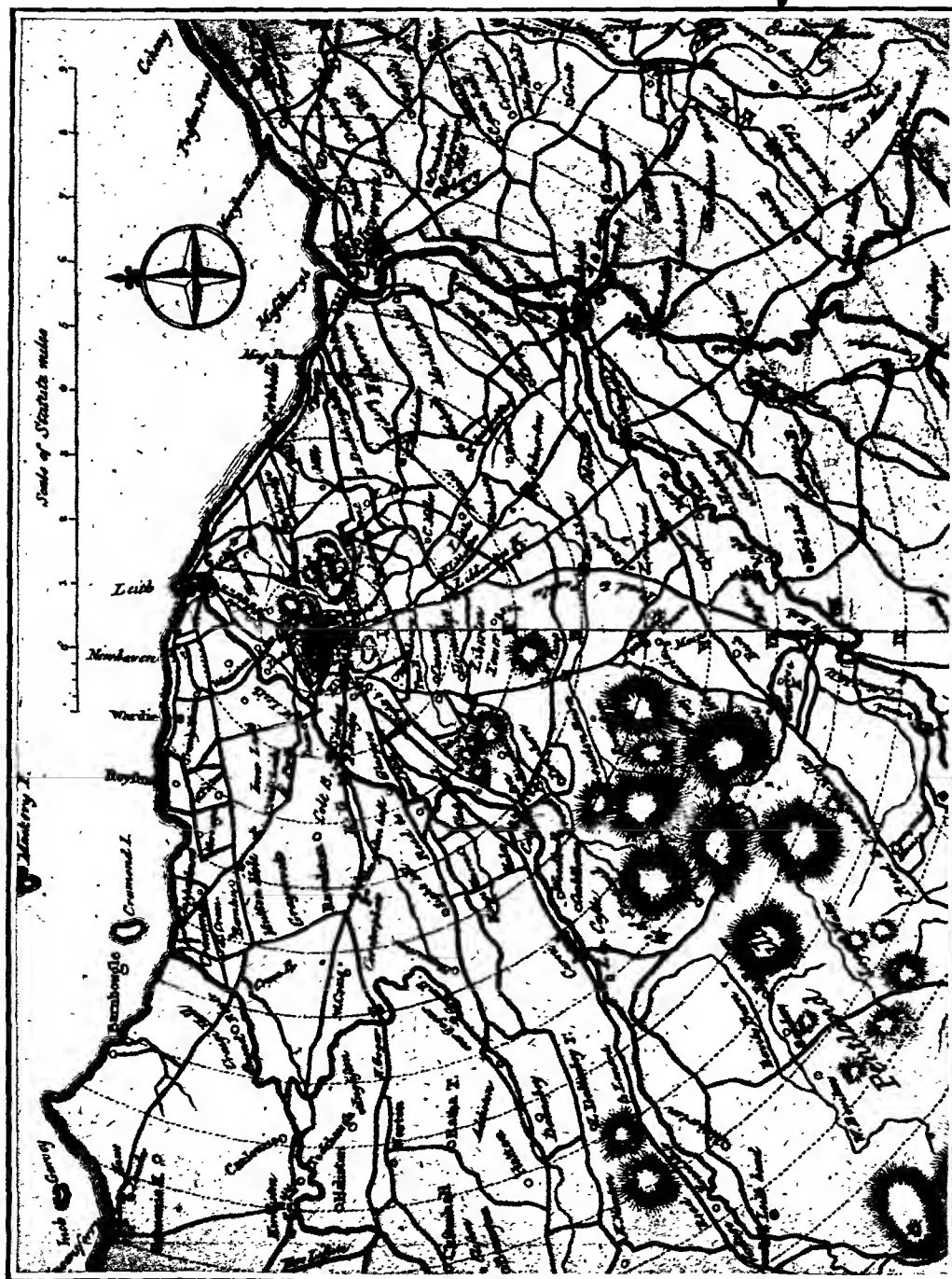


Fig. 8. Map of the Environs of Edinburgh (reduced). Engraved by A. Kincaid, *cir.* 1770. The mile circles radiate from the old Post Office or Tron Church. Scale $\frac{3}{8}$ inch to 1 mile.

through the present village of Liberton, but passed through at the back of what is now Alnwickhill Reservoir, past St Catherine's, where it seems to have divided, one road going to Lasswade, the other to Burdiehouse, Roslin, Peebles, and Penicuik.¹ At what date the road by Liberton Church and Broken Brigs to Lasswade was formed to supersede that by St Catherine's is uncertain, but the latter only is shown in Blaeu's Atlas of 1649, while both are shown in Adair's Map of 1680.

Onwards from Lasswade it is extremely doubtful whether this road was much used beyond Dalhousie Castle, as the road over the hill past Middleton only appears to date from 1755. It is, however, quite likely that this road led to Borthwick Castle,² and then found its way over to the Gala Water and on by Stow, where it crossed the hill to Bridgend near Darnick.

THE WEST PORT.

Two distinct roads diverged at this Port. The one to the right led past the foot of the Castle Rock to Bell's Mills and thence to Cramond or Queensferry. The other road proceeded about half a mile along the suburb of Portsburgh to where it divided into three, the left-hand branch going by Merchiston to Carlops, Dolphinton, Lanark, or Dumfries; the centre road going to Mid-Calder; the right-hand road going to Linlithgow, Stirling, or Glasgow. The first of these routes has not undergone much change, but the Queensferry Road has been greatly altered.

All these routes out of Edinburgh on the east, west, and north were completely altered by the building of the New Town on the north side of the old city, which commenced about 1766. At first, the volume of traffic was of insufficient consequence to render approach roads necessary, and the London Road was the chief exit eastwards from the New Town, until the Regent Arch was opened in 1821. Westwards it was only necessary to join up the west end of Princes Street with Haymarket; while the Lothian Road to Tollcross completed the necessary connecting lines when the New Town superseded the old as the centre of the city.

¹ Penicuik was not on the main road to Peebles until the road by Glencorse Barracks was made in 1812.

² It is remarkable that there seem to have been no castles on the road from Soutra Hill between Lauder and Dalkeith. Borthwick, Dalhousie, and Crichton Castles, which were the only fortalices of any strength outside Dalkeith, were in sequestered spots away from the main lines of traffic. The Berwick road was well guarded by Dunglass Castle, Dunbar Castle, Hailes Castle, and Haddington; and this route also, by the three mentioned already. Why the Soutra route was not protected about Pathhead would almost require some explanation.

II.

FURTHER DISCOVERIES OF CROSS-SLABS IN THE ISLE OF MAN.

BY P. M. C. KERMODE, F.S.A. Scot.

On two previous occasions I have had the pleasure of submitting to this Society accounts of inscribed and sculptured stones newly found in the Isle of Man.¹ To these have now to be added nine more pieces, including two very small and imperfect fragments, making a total of twenty-six brought to light since the publication in 1907 of my *Manx Crosses*, and completing our record of this class of monuments to the end of the year 1915.

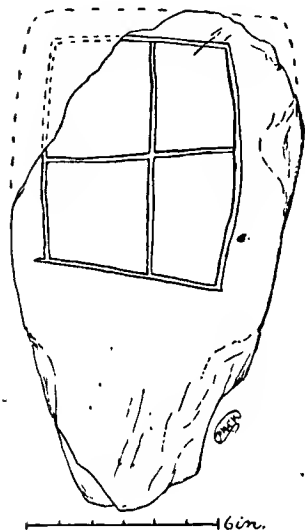


Fig. 1. Slab from East Keeill, Maughold Churchyard.

1 (fig. 1).² An early slab from Maughold Churchyard. Besides the Parish Church, the foundations of which appear to date from the eleventh century, we have within the enclosures traces of four keeills or early Celtic churches. When in the course of our archæological survey we were excavating at the east keeill, this slab was found lying at the level of the floor just outside the doorway, which was in the west gable. It measures 16 inches by 8 inches and about $1\frac{1}{2}$ inch thick, and shows on one face a plain, incised, linear cross within a rectangular panel. The lines, not carefully drawn, are from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch wide, and less than $\frac{1}{16}$ of an inch deep, some almost square in section; they appear to have been cut with a pointed knife rather than with a chisel.

2 (fig. 2). In Andreas Churchyard a water-worn slab of a pale, fine-grained altered slate, unlike others in that collection and apparently an ice-borne boulder, was found in perfect preservation owing to its having been long buried. It measures 20 inches by $5\frac{1}{2}$ inches, and just over 3 inches thick. Each face has in outline a plain Latin cross with very slightly expanding limbs, the ends of which are left open, the angles at the junction having their sharpness rounded off. The lines are from $\frac{3}{8}$ inch to $\frac{1}{2}$ inch wide, but only $\frac{1}{16}$ inch deep, and not cut with a chisel, but hacked or flaked out.

3 (fig. 3). In the ruins of Keeill Woirrey, Cornadale, Maughold, where an early cross-slab [18]² and a late runic inscription [114] had previously

¹ *Proc. S.A. Scot.*, vol. xlv. p. 437, and vol. xlvi. p. 53.

² The figures thus given in brackets refer to those in *Manx Crosses*.

been found, I turned over a slab which, when washed in the rain, revealed a cross somewhat like one at Maughold Church [20], and no doubt of the same period. It measures 42 inches by 16 inches at its widest part, and from 2 to $3\frac{1}{2}$ inches thick. Within an "oval" ring is a plain Latin cross in outline; the surrounding ring looks as though the artist had been in



Fig. 2. From Kirk Andreas.

[Photograph by Mr T. H. Midwood.]

doubt whether to make it oval or rectangular. The lines are from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch wide, formed by hacking to a depth of only $\frac{1}{16}$ inch.

4 (fig. 4). In the spring of 1913, Mr F. S. Graves found a slab on his place at Ballamooar, Kirk Patrick, which he presented to the Manx Museum. It is broken and badly weathered, but it is possible to make out the design. The stone now measures 21 inches by 17 inches, and 3 inches at the thickest part. Its upper half has been worked to a round. Within a circular

ring, formed by a single line and having an inner diameter of 9 inches, is incised an eight-rayed figure, the rays not reaching the ring but terminating at about two-thirds of the distance from the centre. This, taken with the fact that the lines are straight and are not connected



Fig. 3. From Keeill Woirrey, Corna, Maughold.

[*Photograph by Mr G. B. Cowen.*]

at the ends, also that the angles at junction are acute, suggests that it was designed to represent one of the forms of the Chi-Rho monogram. That this symbol was known in the island appears by the use of two crosslets, evidently representing the monogram on the inscribed stone, Maughold [27], on which, too, the circle above contains a six-rayed figure, probably intended to suggest the same idea. Again, on a slab at Maughold [26], below the main circle which surrounds a cross-patee, is a smaller one containing a similar six-rayed design. Unfortunately, in the present example there is a crack down the central line, which is almost weathered away, and if at the top of it there were ever any indication of the Rho, this is now lost. In the alternative we must regard it as a cross-patee. We have one or two examples of outline crosses having the ends of the limbs left open, but acute angles at their junction are very exceptional, and we have no other instance,—unless in the peculiar forms at Peel [15 and 16], either incised or in relief, of a

cross-patee showing the limbs bordered by straight lines.

The stone was found near a wall about a quarter of a mile from the site of a keeill at the head of Ballaquayle Glen, from which it may have been taken at some time unknown.

5 (fig. 5). In a field on Middle Farm, in Braddan, a slab had been set up by a former proprietor of which no one now remembers the history. Last spring the present owner allowed our Museum trustees to place it along with others from the same parish in Braddan old church. It measures 66 inches high by 12 inches to 13 inches wide, expanding across the upper part to a width, originally, of about 16 inches, and is from 6 to $7\frac{1}{2}$ inches

thick. One face is sculptured, and shows, in relief of $\frac{3}{4}$ inch, a plain Latin cross hacked out. It is badly weathered, but the limbs appear to have expanded in the form of the cross on the large slab at Maughold [72], a detail of which we have no other example. Between the limbs are cup-hollows, 1 inch in diameter by $\frac{5}{8}$ inch deep. These, with the oval-shaped expansion of the upper part of the slab, give the suggestion of a surrounding ring. The upper and lower limbs are marked by similar hollows near their extremities.

Though there are now no remains of a keeill on Middle Quarterland, I find that a small plot of ground at its western end is freehold. This, in the Isle of Man, generally indicates ancient Church lands, and it seems most likely that a keeill once occupied the site, from the cemetery attached to which this interesting monument had been brought to its present position.

6 (fig. 6). A small fragment which came to light in excavating at the east keeill, Maughold Churchyard, appears to have been broken off a cross-slab. It is of a rather soft blue slate, unlike the material of the other slabs there, and measures 8 inches by $4\frac{1}{2}$ inches, and from $\frac{3}{4}$ inch to 1 inch thick. It seems to show the end of one arm of a cross in low relief. The other face bears a little incised crosslet and some scores which may have been cut later.

7 (fig. 7). In the same keeill, near the position of the altar, I picked up another fragment, which was of a more gritty material, measuring 9 inches by 5 inches, and 1 inch thick; this has almost certainly been flaked off an early cross-slab. Too little of the design is left to show its position in relation to the figure of a cross, if, as I think, there was one; but though badly worn, it is of interest as giving an example of the C-spiral, doubled, which rarely occurs in our district. Hitherto it has been met with only on four pieces, two of them from this same churchyard. On the Calf of Man crucifix [50] it appears as one of the decorative designs on the lower part of the robe of Christ; a broken piece of zoomorphic interlacing from Maughold [60] shows four such devices between the plait and the

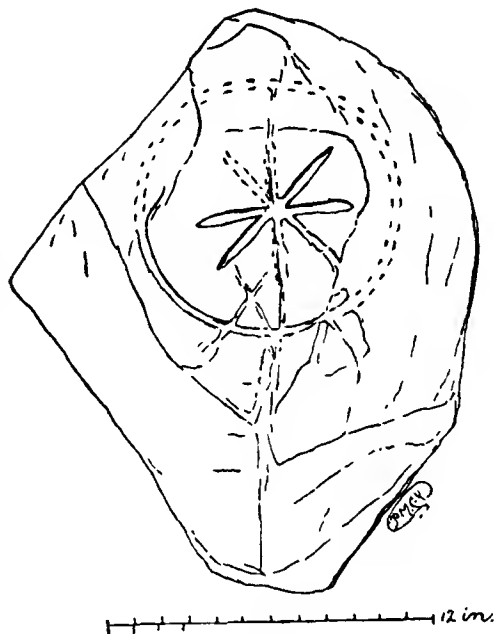


Fig. 4. From Ballamooar, Patrick.

border of the slab; on the main face of the large monument, Maughold [72], which I have suggested may date from the middle of the eleventh century, but Mr Collingwood thinks might be even a century earlier,



Fig. 5. From Middle Farm, Kirk Braddan.

[Photograph by Mr T. S. Keig.]

it occurs as one of the designs in a recess between the limbs; and, finally, the Thor cross, Kirk Bride [97], bears in a panel below the ring which surrounds the cross, on one face, the design of two such spirals doubled and set face to face.

8 (fig. 8). At the clerk's house, close by Maughold Church, was found a broken slab which gives another instance of this spiral design; and it

is not from the same piece as the last. The stone now measures about 11 inches by 9 inches, and $1\frac{3}{8}$ inch thick. The "grain" shows that the stone must have been set up either as represented in my figure, or the other way round. The spiral, which is $\frac{1}{8}$ inch in relief, was no doubt continued to form a similar one facing it, giving a square design, and below it we see the beginning of some interlaced work. This may have decorated the head or, possibly, the lower end of the shaft of a cross which would have been about 6 inches wide. The incised lines at the side of it look like remains of a square panel ornament, probably eight-rayed. If balanced by similar designs between each of the limbs

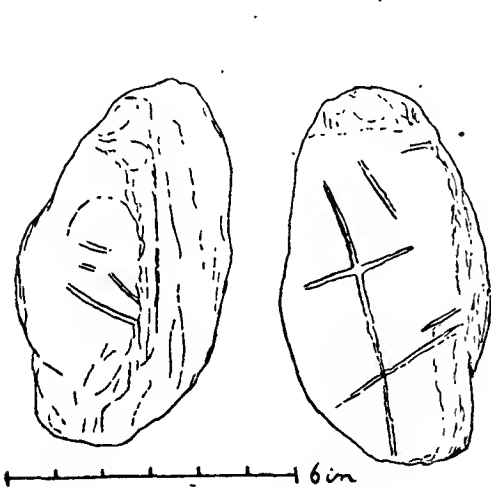


Fig. 6. Fragment from East Keeill,
Kirk Maughold.

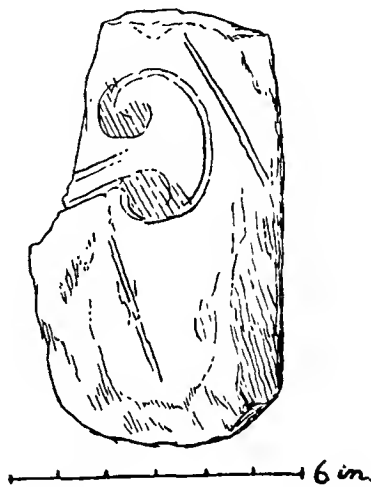


Fig. 7. Flake from East Keeill,
Kirk Maughold.

of a cross, the slab must have measured about 3 feet wide, and may have had another 2 feet or so in length to allow of being set into the ground. If the portion in relief be not part of a cross, it might perhaps be a border surrounding the panel, which does not seem likely; in that case, too, the border was evidently not continued round the four sides. In any event, the design is new to our district. The work is nicely executed with a smooth chisel; the incised lines, V-shaped in section, are nearly $\frac{1}{8}$ inch wide and rather less than $\frac{1}{16}$ inch deep.

9 (fig. 9). When excavating at the north keeill in Maughold Churchyard we came across a lintel grave just outside its south-west corner, at the east end of which was an upright slab. This, in the course of time, had become completely buried beneath the rubbish of the ruined walls. Evidently it had been moved before, as it was broken at both ends and

bore on each face cuts and scribblings which appear to be comparatively recent. It proved to be a Scandinavian monument of late date, and differing greatly from others previously recorded. The stone now measures about 30 inches high by 11 inches wide, and from 2 inches to 2½ inches thick. Each face shows remains of a long-shafted "Celtic cross," to which an appearance of low relief is given by the shallow cup-recesses at the junction of the limbs and by the cabled border. The head was plain, and the shaft shows a stiff and inartistic design, carelessly drawn, formed by a vertical step-pattern, having the angles of the "steps" con-

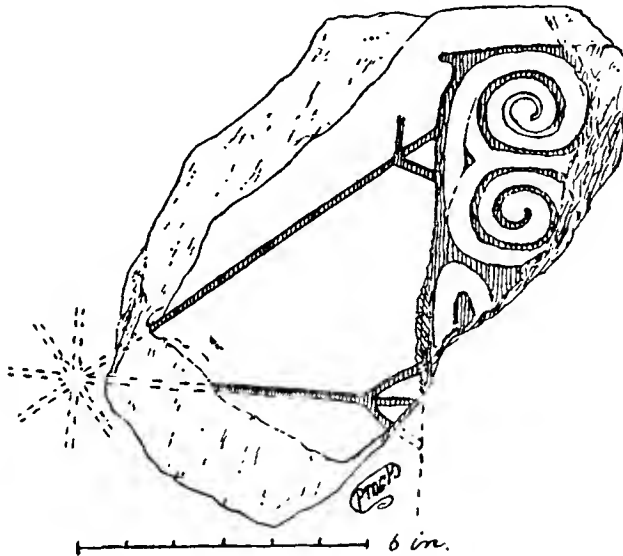


Fig. 8. Fragment from Kirk Maughold.

nected by double scores. The cross is bordered by a well-designed though feebly executed cable-moulding, and the idea of relief is accentuated by a slight gradual deepening of the surface of the slab along the length of this moulding, beginning at a distance from it of about 1 inch. The only other decorative work, just below one limb of the cross, takes the form of a Viking ship, most interesting as being the first example found in the island, and as affording a link with the later monuments in the Western Isles which bear the ship as a design.

The main inscription is on this face, and runs up the space at one side of the shaft. The arm of the cross coming in the way, the last word, which is the name of the person to whom it was erected, was cut parallel to it at the other side of the shaft—that is to say, beneath the other arm of the cross, where there was room for it above the sail of the ship.

Incidentally, this shows that the inscription was cut after the decorative work was finished. A short inscription, in a similar position on the other face of the stone, gives the name of the "rune-smith." The first

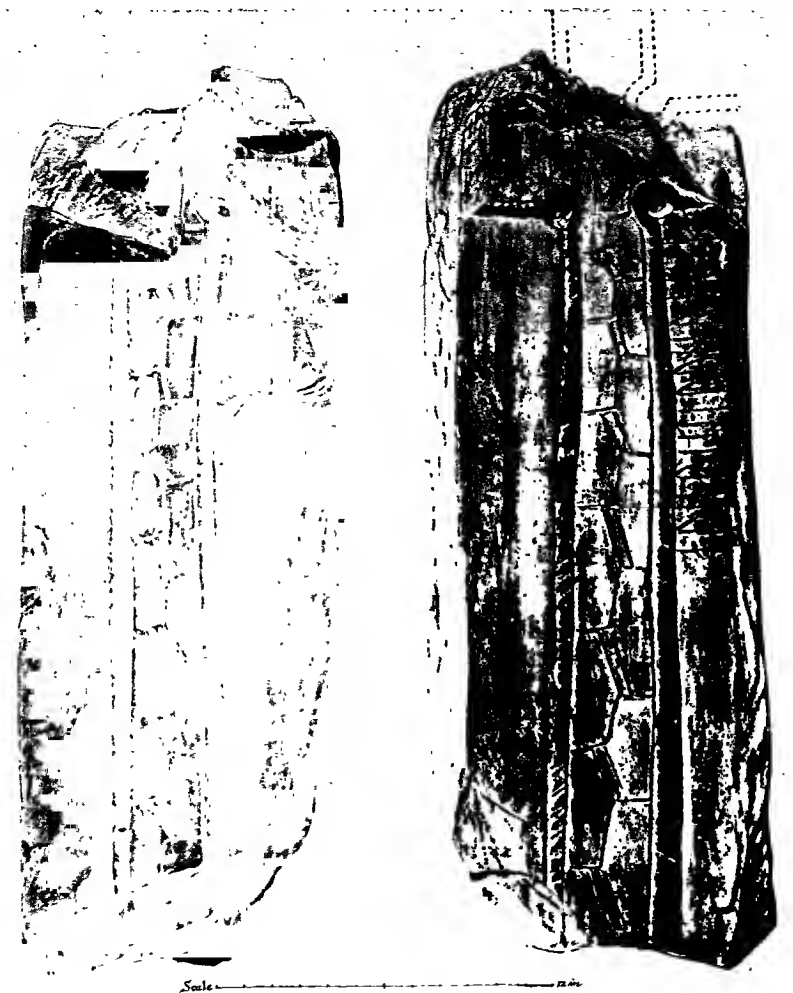


Fig. 9. Hedinn Cross, Maughold.

reads—"Hedinn : seti : krus : thino : eftir : dutur : sino—Lif"; the other—"Arni : risti : runar : thisar." That is to say, "Hedinn set this cross to the memory of his daughter (H)lif." "Arni cut these runes."

The runic characters show peculiarities in form and in value. For

the first time in Man we see the H, hagel, in its ordinary Scandinavian form of a stem-line crossed at the centre by two small diagonal lines. The stung-rune, which in certain of our inscriptions represents H, here stands for E, as it does in those numbered in *Manx Crosses* [85, 104, 112, and 113]. The fourth rune in the Scandinavian Futhork, Oss, is formed in all other Manx inscriptions in which it occurs by two diagonal strokes down-falling on the right side of the stem-line; here the character strokes are on the left, which in the Isle of Man is the form elsewhere used to represent the letter B; as a late form for O we meet with it at Maeshowe. The runes for A, N, and T have their character strokes on both sides of the stem-line, a peculiarity which in our district only occurs elsewhere on the Mal Lumkun cross, Michael [104]; though, unlike that inscription, we find here the rune for S in our usual form of a half-stroke ending in a dot.

The main inscription gives us a new word, and this constitutes also a formula new to the Island, namely, SETI, where elsewhere we find RAISTI in one or other of its forms. The word occurs in the old heathen formula—SATI STAIN, "set up a stone," and, as Mr Collingwood tells us, was introduced into Britain by the Angles. In 1911 Mr Collingwood described an Anglian cross-shaft from Urswick Church with the inscription—"Tunwini *set up* in memory of Torhtred a monument to his lord."¹ He tells me of two shafts from Thornhill, near Dewsbury, which he takes to be of late ninth century, in which we find "sete" and "sett." However, though these were crosses, we do not find the actual word for "cross" expressed as in the present instance, and in the Urswick inscription the objective appears to be "becun," i.e. monument. The word, he adds, was used in this district as late as the middle of the twelfth century, and occurs in the tympanum at Pennington, Furness: "seti thesa kirk" (*Cumb. and West. Trans.*, N.S., iii. 373). The word for "daughter" is here spelled "tutur," as on the slab at Peel [113], and not as on the Mal Lumkun cross, which has "totir." The T-rune generally in this district serves also to represent D. In the short inscription we meet with "risti," cut, carved, from "rista," as in [81, 113 (raist) and 115 (raisti)], and not from "raisa," to raise, as in [100, 105, 108, 109, 111].

The names are all new to our district. They appear in Saga literature, and are not distinctive of nationality. Hedin, in which Thorn, TH, the third rune, is used to express the D, means literally a "jacket of skin or fur," and appears as the name of a heroic being in "Bragi's Shield-lay" as the husband of Hild. At least six men of the name are found

¹ *Trans. of the Cumberland and Westmorland Antiquarian and Archaeological Society*, vol. xi., new series.

in the Icelandic Book of Settlement, and others in the Orkneyinga and other Norse Sagas. It is rather curious that in two instances we read of a Hedin, having a daughter named Hlif, namely, in Vaga Glum's Saga (period of Olaf Tryggvason) and in Landnama,—Hlif, the daughter of Hedin of Meola in Norway. Hlif, literally "cover, protection, shelter, especially of a shield," appears in heroic days with Hlifthrasa and others as maids that sit at Manglaed's knee on the hill of healing. Landnama mentions several of the name, and Turf Einar had a daughter Hlif. The initial H is omitted in our inscription, as it is in the older pieces Michael [100] and Braddan [110], in which we find respectively "Rumun" and "Roskitil," with the initial dropped. Regarding the name Hlif, however, it must be pointed out that it is broken at the letter F (the stem-line and upper character stroke of which can be traced), between which and the arm of the cross there would have been room for three or four runes. It is just possible, therefore, that the name was a compound. This is suggested by some scribbled runes finely scratched between the stern and the sail of the vessel. The first three of these runes are certainly copied from those below them, as shown particularly in a slight peculiarity of the rune for L. If the other three were also correctly copied, we find a name Lifilt [H]lif[h]ild, a compound, however, which appears to be not otherwise known. Arni, also a well-known name occurring in the Sagas, and, about 1170, in Iceland, is found as that among others of the noted builder of the cathedral at Skalholt.

The runes, especially in the short inscription, are deeply scored, evenly spaced, and well formed, but differ to such an extent from those of any other of our inscriptions that, taking into consideration also the novel formula, we must believe it to be the work of a new scribe who had come from or gained his knowledge of runes in a district other than that of our Manx rune-cutters. The inferior workmanship of the cross makes it seem unlikely that he was the artist of that; had he been so, he would also have expressed himself differently, and, instead of saying "risti runar thisar," "cut these runes," he would have said "gerthe," as Gaut the sculptor of Andreas [73] (garthe), or "gerthe thano," *i.e.* made, worked this cross, or this monument, as did the same Gaut on Michael [74] (girthi). There can, I think, be no doubt that both artist and rune-cutter were new to the Island, no other example of the work of either of them being known. The form of the cross on each face, with its long shaft and absence of ring connecting or surrounding the head, is met with among the Scandinavian pieces in our district, but is unusual. Cable-moulding is rare, and, in only two late instances, Michael [104] and Braddan [108], is it applied as a

border to the figure of the cross. But in this case the design of the cable is different, and may afford a clue to the district from which the artist came.

The border is flat, and not really in relief; it is badly weathered as well as unevenly worked, but the better-preserved portion seems to show a double strand which the sculptor had attempted to represent by deep and by thin lightly cut lines alternately, with a very slight scallop between. The nearest approach to this treatment that I know of is on a Scandinavian stone from Bilton, as figured (Class "BC") by Mr Collingwood in his excellent account of "Anglian and Anglo-Danish Sculpture in the West Riding," which he describes as an "unusual cable-edge, imitating a double-strand cord twined round a roll of soft material."¹ At pages 164 and 166 he figures two Anglian crosses from Dewsbury with peculiar cable-work of slightly different character. We may surmise that the artist of Hedin's cross had seen these or work like them, and had tried from memory to execute a similar design. As to the feeble decoration of the shafts, I have seen nothing like it elsewhere.

The ship is more carefully drawn; it has nothing in common with the rest of the decorative work, and looks as though it had been done to order and placed for a definite purpose in a conspicuous position. Possibly it was added by Arni. It is drawn in outline, and ornamented with two lines between the bulwarks and the keel, with a little flourish also at the stem and at the stern. The treatment is realistic; it is high at the prow and the poop, and shows clearly the raised "lypting" on which the commander stood and steered; the bulwarks are low amidships. The sail is furled, and instead of the fixed rudder at the stern we find the steering-oar near to it on the right side, "stjorn bordi" (our "starboard"), not, I think, elsewhere met with. Are we to regard this as merely ornamental, or as in the nature of a heraldic device?

The device used as the arms of the Kings of Man and the Isles when heraldry was in its infancy was a ship, which appears to have been taken over later by the Lord of the Isles when dropped by the Manx Sovereign. In the time of Camden there was in the office of the Duchy of Lancaster a perfect seal, which has now long disappeared, of Godred Crovan; this was described by him as bearing a "ship in ruff sables," the reverse showing the effigy of a man on horseback. A seal of King Olaf to a charter in 1134 bore a ship with sails furled; and in the British Museum are two of King Harold, 1245 and 1246, with the same design. These are figured in Oswald's *Vestigia*, Manx Society, vol. v. One of them shows neither sail nor yard; the other has the sail furled, and shows remains of the standard. But the form of the vessel, is conventional

¹ *Yorkshire Archaeological Journal*, vol. xxiii. p. 141, figs. d, e, f, and g.

and not that of the Viking ship. Attached to a Paisley charter (*circ.* 1175) is a seal of Reginald, second son of Somerled, which bears a ship filled with men-at-arms; the reverse has a man on horseback, like that of Godred Crovan, of whom Reginald's mother was a granddaughter. Woodward's *Heraldry* states that "on a seal of Angus of the Isles, of the year 1292, appended to a homage deed in the chapter-house at Westminster, the lymphad or galley with furled sail appears, but not included in a shield." He gives as reference Laing, *Scottish Seals*, i., No. 450.

After heraldry had grown to be an established science the ship apparently had passed to the descendants of Somerled, now become "Lords of the Isles." It is a well-known heraldic device on sepulchral monuments in Kintyre and the Western Isles from about the fourteenth century. These all show a vessel of the same conventional form, with high prow and stem, but differing from the realistic drawing on Hedin's cross; the sail where shown is generally furled, but in Islay, where are eight instances, two have the sails spread. Sometimes standards are figured, sometimes sailors. All appear to have a fixed rudder at the stern. In 1903, Mr G. Collingwood turned over a slab in St Oran's Chapel, Iona, and found on the other face the worn remains of "a large ship in which six little figures are apparently acting as crew, one seeming to manage the sail." Some of the other figures appear to be in illustration of the Sigurd legend, so favoured in Man, whose royal house claimed descent from the hero. The rude drawing and the hacked work, adds Mr Collingwood, is "extremely unlike the native sculpture of Iona, though strikingly similar to the Manx carvings."¹ He thinks it may have been erected to Godred, King of Man. Now we learn from the *Manx Chronicle* that Godred died at St Patrick's Isle in 1187, and was buried at Iona. Mr A. Ritchie of Iona has kindly sent me a rubbing of the stone and a tracing of the figure of it given by Drummond. The ship shows high prow and stern, but is more rudely drawn than in our present example; no raised poop appears, and the hull is represented as very low, evidently to allow more space for the figures; it shows neither oar nor rudder. Mr Collingwood's figure confirms his account of the slab. It may seem late for this kind of work, but the tradition of it survived in the Isle of Man till the close of the Scandinavian period, and his surmise that this was a memorial to Godred, King of Man, seems quite likely.

In earlier times we find a boat figured on Scandinavian or Anglian monuments in the north of England, as on the Fishing Stone at Gosforth, and, in 1906, Mr Collingwood gave an account of an Anglo-Danish hogback found at Lowther which he regards as tenth-century work. This figures

¹ *Saga Book of the Viking Club*, vol. iii., part iii., Jan. 1904, p. 305.

a Viking ship filled with men and their shields; it has high prow and stern, but, possibly for want of space, no mast is shown.¹ On an elaborately sculptured cross-slab at Cossins, Forfarshire, which notwithstanding some "Pictish" symbols appears to be of rather late date, the figure of a boat is seen, with six men; that no mast is shown is probably due to want of space; it has straight bulwarks, but high prow and stern.²

The whole appearance of the Hedin cross is late, certainly a good deal more so than the monument to Godred Olafsson in Iona. The inscription is no great help in dating it, as the form of the runes and the precise wording are due to the district from which Arni came as much as to the period. Nothing in the inscription, however, is opposed to a late date, which is rather supported by the use of the B-rune to represent O. Neither do we learn anything from the names, as, unfortunately, we have no other record by which to identify them. There was, I think, a distinct purpose in figuring the vessel, which, I suggest, was added by Arni when he came to cut the runes, making it, as it were, a part of his inscription. This would be recognised by contemporaries as an indication that the descent of Lif either on the father's or on the mother's side, could be traced to Godred Crovan, from whom both the Kings of Man and the Lords of the Isles had derived the ship as an armorial bearing.

¹ *Trans. of the Cumberland and Westmorland Antiquarian and Archaeological Society*, vol. vii., new series.

² *Early Christian Monuments of Scotland*, by J. Romilly Allen, p. 217, fig. 230, B.

MONDAY, 10th January 1916.

THE HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

A Ballot having been taken, the following were duly elected:—

Fellows.

CHARLES STEWART, W.S., 28 Coates Gardens.
ALAN KEITH ROBERTSON, Architect, 12 Russell Place, Leith.
JOHN BOLAM JOHNSON, C.A., 12 Granby Road.

The following Donations were announced:—

1. By Captain H. L. NORTON TRAILL,
F.S.A. Scot.

Collection of stone implements, consisting of 30 Axes, 1 Adze, 1 Polishing Stone, 5 Mullers, and 2 perforated discoid Hammers, obtained in 1913 from a small cannibal tribe who occupied ground under the Bauchi Plateau, Nassarawa Province, Northern Nigeria, by whom they were dug up when breaking in new land for farms. When preserved, axe-heads and perforated stones are put by the natives in "juju" houses.

2. By W. GILLESPIE, South Barsalloch,
Port William, Wigtownshire.

Axe of indurated claystone which has been blocked into shape, but not polished, $9\frac{1}{4}$ inches in length, $2\frac{1}{2}$ inches in breadth at the cutting edge, tapering to $1\frac{1}{4}$ inch at the butt; found along with a number of chips of similar material on the Farm of Hill Top of Landberrick, Port William, Parish of Mochrum (fig. 1).

3. By WILLIAM FORSYTH, F.R.C.S.E.,
F.S.A. Scot.

Five Church Tokens:—Kincardine (Ross-shire); Liff, 1799; Nigg, 1812; Greenock Middle Church, 1843; Liff and Benzie, 1854.

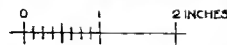


Fig. 1. Stone Axe from Hill Top of Landberrick.

4. By JAMES LYLE, F.S.A. Scot.

Silver rat-tail Spoon with trefoil head; Edinburgh hall-mark, 1701; assay master, James Penman; maker, William Burton.

The following Communications were read:—

I

ACCOUNT OF EXCAVATIONS ON TRAPRAIN LAW IN THE PARISH OF PRESTONKIRK. COUNTY OF HADDINGTON, IN 1915. BY A. O. CURLE, F.S.A. SCOT., DIRECTOR OF THE NATIONAL MUSEUM; AND JAMES E. CREE, F.S.A. SCOT.

In the initial Report of our excavations at Traprain, which appeared in last year's *Proceedings* (vol. xlix. p. 139), reference was made on page 142 to a terrace which extends along the northern flank of the hill, reaching nearly to the quarry. "On to this terrace," as stated in the Report, "there leads an approach which appears to have formed at one time an important access to the fort. The road proceeds up a hollow, and where it debouches on the terrace its outer side is demarcated to right and to left by large stones set on end." As it was found possible to commence work this year towards the end of April, when the winds of spring were yet too boisterous and frigid to render the work of supervision tolerable on the higher level of the hill, we determined to effect an exploration of this terrace (fig. 1). From a consideration of the various lines of entrenchment we had conjectured that there was a likelihood of its having been under occupation during the period of the earlier fort, traces of which were previously noted,¹ and we hoped to be fortunate enough to determine that period.

From the site of the principal excavations of the previous year the main part of the terrace lay at a distance of some 500 yards, and at an elevation of some 200 feet lower. It was, moreover, cut off from the more habitable portions of the hill by a steep escarpment. A cut made across the bottom of the hollow up which the approach to it led showed no signs of a constructed roadway. As this entrance was sure to have been protected by guard-houses or structures of some sort, we removed the turf on the level ground on the western side, in the angle formed between the edge of the lower slope and the lip of the hollow, and subtended by the line of large placed stones referred to above as protruding

¹ Vol. xlix. p. 143.

level (fig. 2). No relics of any kind were discovered in the upper surface. But on removal of the exposed masses of stones, and at a depth of about 6 inches lower, a more decided occupation surface was met with. Near the centre, and stretching across the area to the northward, was a floor of carefully laid paving measuring 15 feet

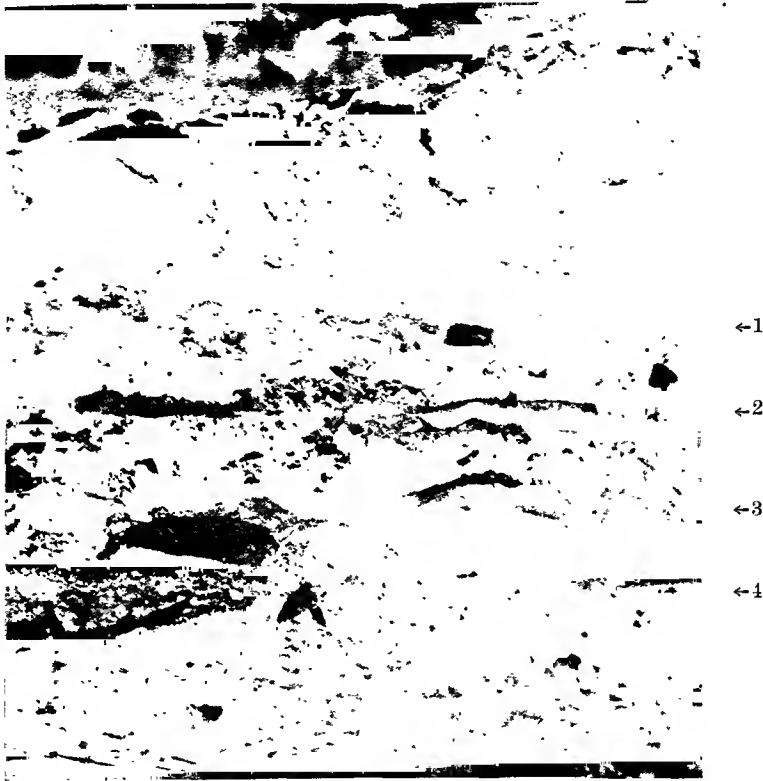


Fig. 2. Sectional view showing the Four Levels on Area B of the Terrace.

in length by 9 feet at its greatest breadth (fig. 3). At 5 feet from its northern extremity and a little to the east of the central line was a small four-sided enclosure formed of thin stones set on edge, measuring superficially, at its upper surface, some 1 foot 2 inches by 8 inches, and perpendicularly some 7 or 8 inches. In an area of soil more or less unencumbered with stones, which stretched for some 15 feet to the east of this pavement, was set at a distance of about 5 feet from it an almost identical setting, measuring at the surface, however, only 9 inches by 6½ inches. These cavities did not contain clay, nor did they

disclose any signs of the action of fire about them. The explanation which seems to meet the circumstances most readily is that these were socket-holes for posts used in supporting a roof. In another part of the excavations we shall meet with them again. To the west of the paving at its northern end, and separated from it by a few feet of open soil, lay a triangular area of similar paving measuring some 6 or 7 feet in bisecting axis by 6 feet at base. Seven feet farther to the west a well-preserved hearth was exposed (fig. 4), lying in open soil with no trace of stonework adjacent. In form it was a rectangular oblong, mar-



Fig. 3. Paving exposed on second level on Area B of Terrace.

gined on the sides and at the back with kerb-stones, and it measured 4 feet $3\frac{1}{2}$ inches in extreme length, with an interior breadth of 2 feet. It was paved all over, and at 2 feet from the back it was divided into two by a step making the outer division 4 inches lower than the inner. The front, which faced almost due north, was not enclosed. Towards the east end of the excavation there were remains of another similar hearth, but with a level floor.

Around the east and north sides of the area, following more or less the contour lines of the site, there lay irregular heaps of large stones with a general breadth of 4 feet, which might have been the remains of a wall, but there was not sufficient evidence of structure to justify their permanent record on a plan.

From this level there came a few relics which give some indication

from the turf. The area laid bare measured 46 feet from east to west by 24 feet from north to south. On removing the turf and top spit of soil, masses of stones were exposed lying irregularly at an average depth of about 1 foot below the surface, without giving a key to the plan of any previously existing structures. A certain amount of clay beneath



Fig. 1. View along the Terrace from the east end, showing the hollow and adjacent excavation in the foreground.]

the stones may have indicated a floor level, but the indications were too faint to permit of any conclusions being drawn therefrom. The general appearance was much the same as that disclosed on removal of the turf over area B in the previous year's excavation. One point, however, was made clear. The large stones set on edge and on end, which extend to right and left of the debouchment of the hollow, belonged undoubtedly to the latest period, as a large block which stood on the southern boundary of our area did not pass beneath this

level (fig. 2). No relics of any kind were discovered in the upper surface. But on removal of the exposed masses of stones, and at a depth of about 6 inches lower, a more decided occupation surface was met with. Near the centre, and stretching across the area to the northward, was a floor of carefully laid paving measuring 15 feet



Fig. 2. Sectional view showing the Four Levels on Area B of the Terrace.

in length by 9 feet at its greatest breadth (fig. 3). At 5 feet from its northern extremity and a little to the east of the central line was a small four-sided enclosure formed of thin stones set on edge, measuring superficially, at its upper surface, some 1 foot 2 inches by 8 inches, and perpendicularly some 7 or 8 inches. In an area of soil more or less unencumbered with stones, which stretched for some 15 feet to the east of this pavement, was set at a distance of about 5 feet from it an almost identical setting, measuring at the surface, however, only 9 inches by 6½ inches. These cavities did not contain clay, nor did they

disclose any signs of the action of fire about them. The explanation which seems to meet the circumstances most readily is that these were socket-holes for posts used in supporting a roof. In another part of the excavations we shall meet with them again. To the west of the paving at its northern end, and separated from it by a few feet of open soil, lay a triangular area of similar paving measuring some 6 or 7 feet in bisecting axis by 6 feet at base. Seven feet farther to the west a well-preserved hearth was exposed (fig. 4), lying in open soil with no trace of stonework adjacent. In form it was a rectangular oblong, mar-



Fig. 3. Paving exposed on second level on Area B of Terrace.

gined on the sides and at the back with kerb-stones, and it measured 4 feet $3\frac{1}{2}$ inches in extreme length, with an interior breadth of 2 feet. It was paved all over, and at 2 feet from the back it was divided into two by a step making the outer division 4 inches lower than the inner. The front, which faced almost due north, was not enclosed. Towards the east end of the excavation there were remains of another similar hearth, but with a level floor.

Around the east and north sides of the area, following more or less the contour lines of the site, there lay irregular heaps of large stones with a general breadth of 4 feet, which might have been the remains of a wall, but there was not sufficient evidence of structure to justify their permanent record on a plan.

From this level there came a few relics which give some indication

of the period of its occupation. A button-like disc of dark blue glass $\frac{1}{2}$ inch in diameter, a playing-man identical with specimens found at Newstead (fig. 38, No. 12); a larger object of the same class made of purplish sandstone, measuring $1\frac{3}{16}$ inch in diameter; the segment of the rim of a large glass bottle of greenish glass, evidently Roman; a fragment of a Samian ware bowl (Dragendorff, type 37), much weathered but probably of Antonine date; a piece of the side and bottom of a vase or jug of dark material coated with a dark grey slip, of the



Fig. 4. Hearth on second level of Area B on Terrace.

nature of Castor ware; a fragment of Roman pottery, mottled grey on the outer surface and dark grey on the inner, ornamented on the former with an incised wavy line on a band formed between two incised mouldings (fig. 19, No. 10); a square piece of jet showing at one end the knife or saw marks where it has been severed from another piece (fig. 40, No. 8); and lastly, half of a flat horse-shoe (fig. 34, No. 2). There was also a small quantity of native hand-made pottery, including a portion of the side of a cup-like vessel and a segment of a rim (fig. 16, No. 5), of a class of ware only represented so far by two other specimens, and these found on the site higher up the hill to be mentioned later on. It is black in

colour and thick and heavy in quality, with a markedly vesicular texture.

At a depth of 8 or 9 inches below the foregoing level another occupation surface was disclosed. Upon it a number of large stones irregularly laid in two groups seemed to suggest the sites of two circular huts with a diameter each of 10 feet, but here again the evidence warranted no definite conclusions. Set in the soil at a spot adjacent to three large flat slabs lying in line, was a circular rudely dressed boulder of sandstone (fig. 5) 18 inches in diameter, hollowed in the centre to a depth of 7 inches, the cavity measuring 7 inches at its mouth and tapering to 5 inches at its base. There were also found an oval stone of fine-grained sandstone with a highly polished concave surface on two opposite faces;¹ the point end of an iron sword-blade;² a lead whorl, much wasted; several pieces of native hand-made pottery

¹ See *infra*, p. 122.

² See *infra*, p. 113.

of the usual coarse description; a small piece of Roman bottle-glass; a tiny blue glass bead; a piece of the neck and lip, the latter much everted, of a Roman jug of dark grey pottery (fig. 18, No. 6), the neck of which is without mouldings; a fragment of Samian ware from near the bottom of a vessel, showing the remains of a border of pointed trefoils disconnected, and placed somewhat obliquely (fig. 21, No. 2), the glaze suggesting a second-century date. The native pottery recovered from this level was also small in quantity. A segment of a rim, larger than usually met with, indicated a vessel with an interior diameter at the mouth of approximately 10 inches (fig. 16, No. 3). The few pieces of rims found showed no peculiarities of section.

Some 6 to 8 inches deeper there was laid bare the lowest occupation level on this site. Here again there was an utter absence of structural remains—not even those of a hearth being discernible. The natural level of the ground dips very markedly from south to north towards the east end of the area; and, to render the floor level in this direction, large stones had been piled one on top of another for a depth of several feet. The relics recovered were few: a piece of bronze wire; a tiny fragment of thin Samian ware, covered with a hard bright glaze, and probably of first-century date; a portion of the shoulder of a globular vessel of hard black Roman ware, ornamented with a band of vertical lines drawn between two incised mouldings (fig. 19, No. 15); about the same amount of native pottery as from the level above. The native ware included many fragments of one particular pot, and pieces only of two or three others. None of them presented any feature worthy of note.

Towards the opposite end of the terrace, some 60 feet eastward of the magazine which holds the quarrymen's explosives, and which is visible on the horizon in fig. 3, was a spot which from surface indications held out promise of good results from excavation. Rabbits had burrowed in it freely, and nettles luxuriated over an uneven sward. An exploratory trench cut across showed a depth of 4 feet of forced soil. This seemed to justify farther proceedings, and accordingly an oval area



Fig. 5. Block of Sandstone with cavity in centre.

measuring 30 feet by 20 feet was unturfed and systematically excavated to the bottom. The results proved disappointing. Three occupation surfaces were discovered, though the evidence of the existence of the two upper levels was less distinct than in the ground previously excavated. At a depth below the turf varying from 8 to 18 inches, according to the fall of the ground, were found some remains of paving to which certain large stones set on edge on the eastern arc of the periphery seemed to belong, and also an oblong rectangular hearth



Fig. 6. Hearth on latest occupation surface of Area A on Terrace.

(fig. 6) surrounded by a kerb on three sides, paved all over and open towards the north-east. As in the other area, this level yielded no relics. At a further depth of about a foot were indications of a second level consisting of occasional stones lying horizontally and some small beds of clay. From this came a curious iron fibula with a bronze pin (fig. 22, No. 6), to be described later, as well as several fragments of Roman pottery, viz. a number of pieces of a large vase or urn of hard light-red ware similar in texture to an urn from Pit xxv. at Newstead,¹ to which a second-century date has been problematically assigned, and a small piece of hard grey ware somewhat irregular in its curvature and showing remains of a scroll ornament lightly impressed on the surface (fig. 19, No. 18).

At a general average of a foot below the last level came the bottom

¹ James Curle, *A Roman Frontier Post*, plate I., A. No. 3.

occupation surface, which alone of these strata showed a considerable amount of discoloration, extending to a depth of several inches. Here were found a small discoid bead of opaque yellow glass (fig. 26, No. 1), an amorphous piece of bronze, and some pieces of Roman and native pottery. The Roman pottery included two pieces of Samian ware, one a small indefinite fragment with a hard bright glaze, the other a portion of the lip of what was probably a saucer-like platter (Dragendorff, type 18), similar to many fragments from Newstead. The ware is thin, and the moulding around the rim is of slight projection. The glaze of this fragment is somewhat worn, and does not seem to be so hard and bright as that of the Newstead specimens, which came from the early ditch there, pointing to a first-century date for the type. Of coarser Roman wares from this level we have a fragment of the lip of a vase or urn of hard light-red ware, showing an identical rim section with the urn from Pit xxv. at Newstead mentioned above, and also some other fragments of the same class of ware, one of them showing traces of lattice decoration. There were found also a piece of a thin dark grey cooking-pot with a gritty surface, and a fragment of pot, both surfaces of which are of a rather metallic purplish tint. The inside of the latter piece shows the uneven twisted appearance which was very marked in the bottom of the small black vase, portions of which were found in the lowest level last year.¹ On this site singularly little native pottery was found.

The result of the excavation on the terrace thus brought us no nearer to the determination of the date of occupancy of the earlier fortifications, but it revealed to us that we had here exactly the same phenomena as we had encountered on the other part of the hill where our previous excavations had been conducted—three, or four, periods of occupation, the earliest dating probably from the end of the first century. As elsewhere, the paucity of relics and the absence of discoloration of the soil on the two upper levels clearly pointed to occupations of short duration. It is perhaps worthy of remark that in this particular excavation we found no evidence of the metallurgical processes pursued in all the other parts of the hill so far explored, no portions of moulds or of crucibles coming to light. Possibly this terrace, being outside the main defence which passed along the hillside above, was occupied as an outwork, and consequently the arts of the township were not practised here. Several short exploratory trenches at other parts of the terrace yielding no results, it was decided to rest content with the facts elucidated, and to transfer our further attentions to the ground on the upper plateau adjoining and to the north of our excavation of 1914.

¹ See *Proceedings*, vol. xlix. p. 161, fig. 16, No. 5.

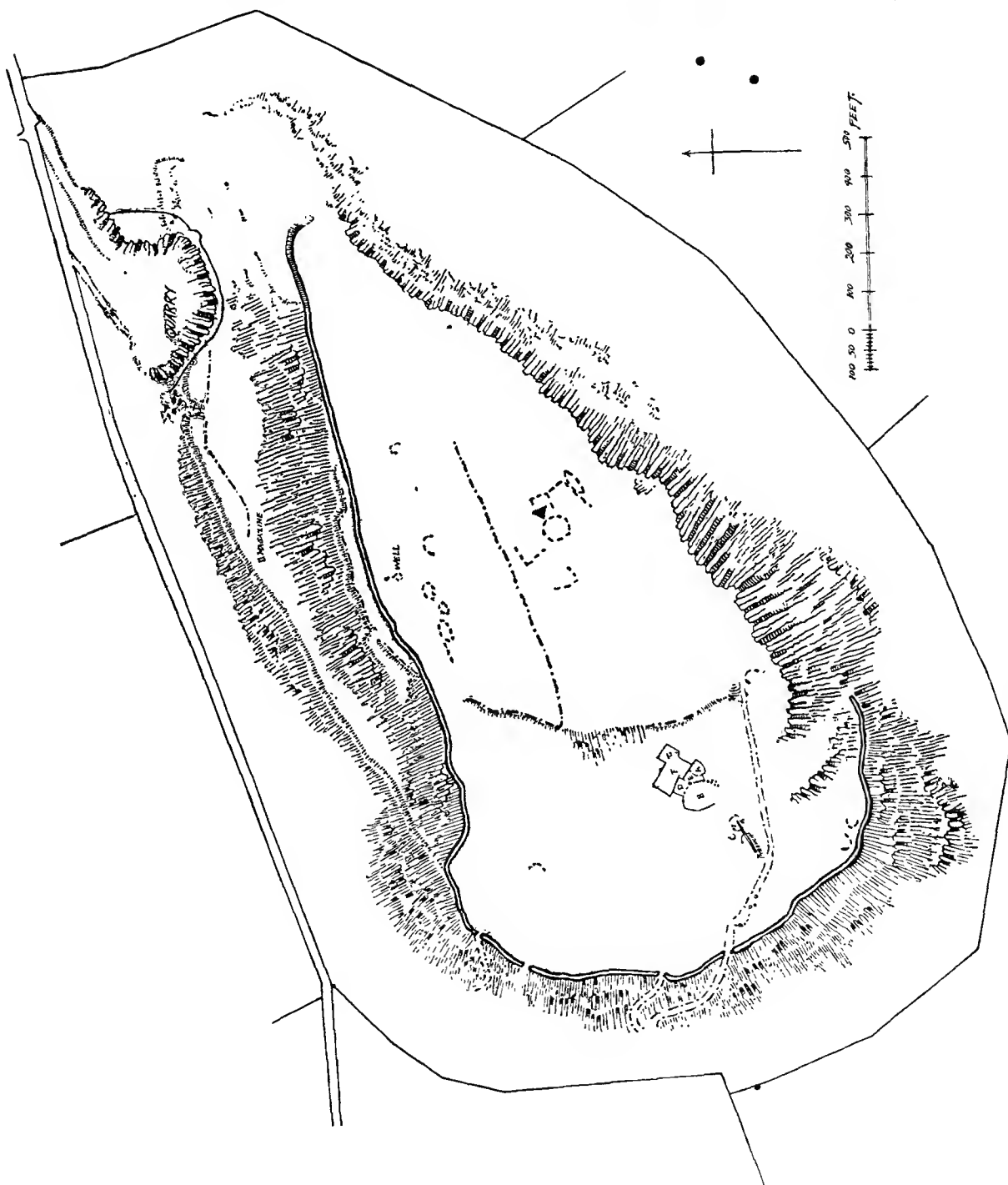


Fig. 7. Plan of Traprain Law showing the defences and principal area of excavation.

To facilitate planning, a base-line east and west was laid down which partially traversed the irregular outline of the previous excavation for a length of 76 feet, and on this a square of 50 feet was marked off, itself subdivided into four subdivisions of 25 feet. To work out to the edge of the occupied area, it was subsequently found necessary to increase, by an additional 6 feet towards the east and 10 feet towards the west, the ground originally laid out. This *insula* (F on the plans), after deduction of the enclosed part of last year's excavation, amounted to 4386 square feet. On the completion of the excavation of F, a first subdivision of *insula* G, containing 990 square feet, was explored. Thus the whole area cleared on this site during the past summer extended to 5376 square feet, or about one-eighth of an acre. It is indicated by the letters F and G on the plan (fig. 7).

Over the whole of this area, in sections which need not be specified, the turf and the soil beneath were removed to a depth of about 14 inches altogether, when a definite level of occupation was reached. Here and there in the soil large stones were encountered, but they afforded no evidence of a subsequent inhabitation of the site. The general appearance of the surface when exposed differed markedly from that of area B on the highest level last year, there being an absence of the confused masses of stones which were such a prominent feature on that site. Here, as the plan shows (fig. 8), there were a number of hearths exposed, seven in all, as well as certain remains which, crossing the western half of the excavation, gave a distinct suggestion of structure. In the centre was a roughly paved and irregularly circular area with a diameter of about 9 feet; from the north edge of this a long bed of large stones ran in a north-north-easterly direction, having the appearance of a wall-base some 3 feet in breadth. It did not seem to terminate at the edge of the excavation, and probably will be met with again in the unexplored ground of area G. From the south edge of the paving a discontinuous line of stones was traceable in a south-easterly direction for a distance of some 20 feet. To the west, and almost equidistant from both these lines, lay hearths, two close together in each case. To the east of the paving and projecting line of stones, and near the mesial line of area F, lay three more hearths—one apart, 5 feet in length by 3 feet in breadth, the two others in contact, the larger of them 3 feet 6 inches in length by 2 feet 4 inches in breadth, and the smaller 1 foot 9 inches in length by 2 feet in breadth. Further east, towards the margin of the excavation, were two other small irregular paved areas, in one of which lay one of the stones of a quern. Over the exposed section of area G lay many large stones. The general disposition of these suggested the possibility of their having been laid to enclose the paved

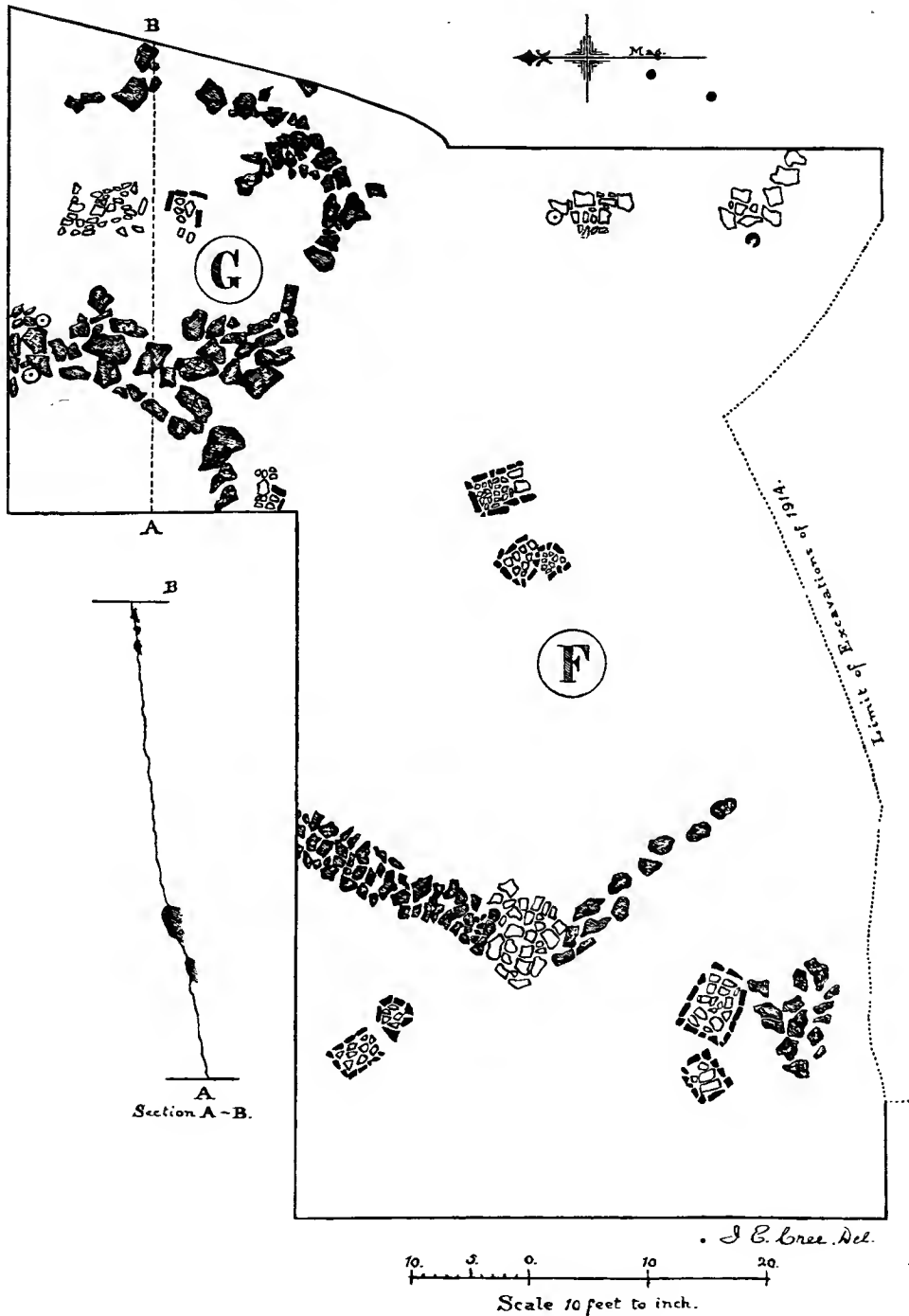


Fig. 8. Plan of First Level on Areas F and G.

area and hearth of which there are remains, but it is doubtful if their present positions have been due to any such controlled design; more probably these positions are in large measure fortuitous. As the section A-B shows, however, the eastern part of the area lies at a level considerably above the ground on the extreme west, and along the line where a somewhat sudden change occurs in the levels lies a mass of stones which seem to extend northwards as if to bound the higher ground. But until the rest of area G is uncovered it is idle to speculate as to whether there is any design underlying the position of this mass or not.

On this level the plan shows two arrangements of stone which appear to be connected with human habitation—the areas of flat paving and the hearths. The former are indicated by the stones which are unhatched on the plan, the hatched stones indicating irregular boulders or detached pieces of rock. It will be noticed that the paving and the hearths are not contiguous; also that the latter are arranged in pairs in open soil, with no indication whatever of a structure of any kind that might suggest a habitation around them. We are inclined, therefore, to assume that the paved areas represent the sites or floors of dwellings, and that the hearths were not beneath the roofs of the huts. Further evidence of this is obtained from the space occupied by adjacent hearths. Thus the longest diameter through the pair in the south-west corner is 12 feet; those near the centre of F are too close to each other to permit of walls between, and the greatest breadth across them is nearly 11 feet; the pair in the north-west corner together extend over a distance of 9 feet. Now, it is hardly conceivable that the dwellings of the period were of such dimensions that they could enclose fireplaces so large as these and yet leave accommodation for the inmates as well. It seems probable, therefore, that these hearths were situated away from the houses and in the open, so as to diminish the danger of fire. In studying the hearths other peculiarities present themselves. As already stated, they are arranged in pairs, and each pair consists of one large and rectangular hearth, and one smaller hearth either rectangular or circular. It will be remembered that, in the case of the hearth exposed on the second level of the site on the terrace nearer the quarry, the floor was on two levels, thus dividing it into two parts, as if for some similar purpose. These hearths are paved and carefully furnished with a kerb of stones set on edge, which in three of the instances on the plan extend only along three sides. The open end, we may therefore presume, was the front. Adjacent to this end, in the case of the fireplace in the north-west corner (fig. 9), and of the conjoint hearths near the centre of area F, lay the smaller hearths. The paving was usually formed from thin

flakes of sandstone, presumably to prevent splintering by the action of the fire; and, where other stone was used, it was covered with a thin layer of clay as a preventive. With the exception of the smaller one in the south-west corner, the general direction of the hearths on this level is approximately from the north-west to south-east.

On removal of the surface of the latest occupation, which we designate the first level, and of several inches of soil beneath it, a fresh surface of occupation (fig. 10), the second level, was reached.



Fig. 9. Hearths in north-west corner of first level.

Here again on the western half of area F there were numerous large contiguous stones presenting a general appearance of having been laid in the positions they occupied, but not conforming to any recognisable plan. In the western half of F there were two large oblong rectangular hearths, apparently complete in outline, as well as remains of others, and three complete small circular hearths with diameters of from 2 to 3 feet over all, while on G were two more, both oblong. The arrangement of the hearths in pairs was not so apparent on this level, but that may be due in some measure to the remains being less complete. All the hearths in this instance have a general westerly direction, with the exception of that at the extreme western limit of F. It will be observed that this particular hearth lies adjacent to the only piece of paving shown on the

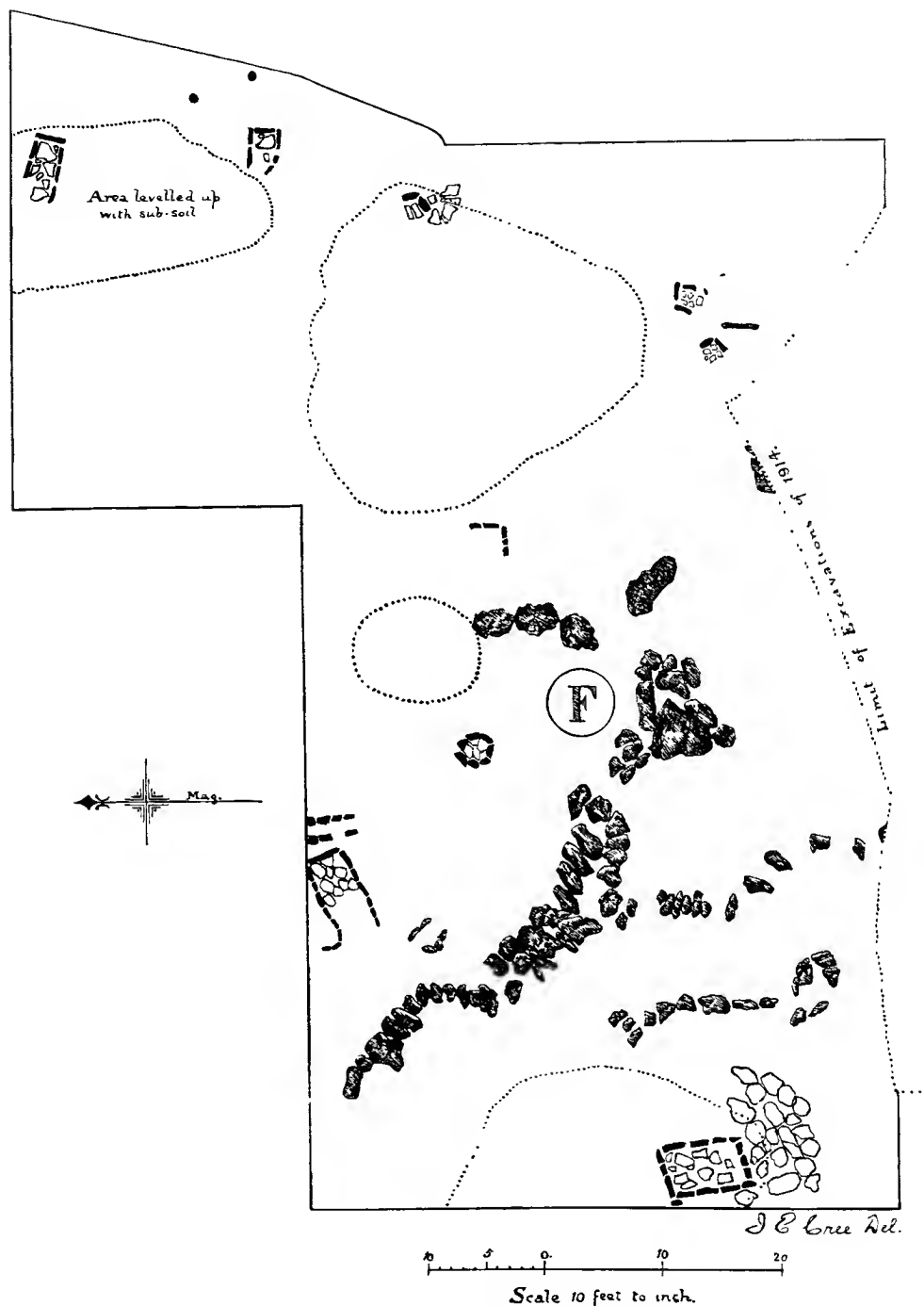


Fig. 10. Plan of Second Level on Areas F and G.

plan, thus, as it were, directly controverting the theory adduced above. The circumstances connected with it are, however, peculiar. Over the space within the dotted line enclosing it were found considerable quantities of hardened clay, much of it completely burnt red or black, and as hard as stone, while some of it, not so violently acted on by fire, was of a reddish sandy appearance. That some of this clay was the remains of a floor seemed to be fairly clear from the smoothness of its upper surface, but there were also among it many pieces distinctly bearing the im-



Fig. 11. Pieces of Burnt Clay showing impressions of wattles.

pression of wattling (fig. 11), and not only of the wattles but also (as shown by No. 3 of the figure) of the upright posts which had sustained the structure. The burnt clay which bore the impressions was found almost entirely on the south and south-west sides of the clay-strewn area, and clearly belonged to the second level. But several pieces of this impressed clay were discovered directly underneath the hearth, and must therefore be regarded either as referable to an earlier occupation of this particular site or as demonstrating that the hearth was a secondary construction placed on the ruins of the clay "bigging." This hearth, a rectangular oblong in shape, was surrounded on all four sides by kerb-stones, and measured over all 7 feet by 4 feet 9 inches. We were

fortunate in finding among the burnt clay some pieces of carbonised wood, two of which had been cut with a sharp tool. By the courtesy of Professor Bayley Balfour an examination has been made of these by Mr H. F. Tagg, who has pronounced them to be hazel.

The second large complete hearth (fig. 12) on this level was situated close to the northern limit of the excavated area on the western half of



Fig. 12. Hearth on second level of Area F, with curved kerb.

area F. It had a length of 8 feet and a breadth of 3 feet 6 inches. It was paved only on the inner half, and the kerb-stones surrounded it on three sides, the open end towards the west-south-west. On its north side, at the front, the kerbing was curved round sharply at its extremity, but no explanation of this feature was apparent. Conceivably a smaller hearth was contained in the curve, but if so no paving or evidence of it remained. Immediately to the east of this hearth, and, at the nearest point, little more than a foot distant was a curious setting of stones, analogies to which we shall meet with again. It consisted of two rows of stones placed in parallel lines projecting from 8 inches to a foot above

the ancient surface-level, some 18 inches apart at their highest points, and converging downwards until their bases were only a few inches apart. This gutter-like arrangement extended for a length of about 4 feet, but a farther continuation may be found at a future date in area G. There was no clay or puddle at the base of the stones such as might indicate use as a water channel, nor did there appear to be any fall in level from end to end, although the distance was so short that a gradient would hardly have been perceptible.

Two additional areas over which compacted, but not burnt, clay was found are indicated on the plan by dotted lines. Across the section of area G, also indicated on the plan, was an oval area which had been levelled up with stony subsoil.

From 8 inches to a foot below the surface of the second occupation occurred the third level (fig. 13). On this there were found three paved areas as shown on the plan, all within area F: one near the centre, and one at the east and west ends respectively. The central and westerly of these have a semblance of circularity, each with an approximate diameter of 8 or 9 feet. Doing duty as a paving-stone in the central floor was the upper stone of a quern, with a hole for a handle in a projecting point. The appearance of the easterly pavement showed a straight edge with two kerbs on one side and the adjacent stones placed at right angles, suggesting that if this had been in reality a floor the superstructure was square or oblong rather than circular. Near to the last-mentioned paving, on the east, were remains of a hearth.

More noteworthy, however, were the surroundings of the pavement shown on the plan in the north-west corner of the excavation. Here in front, or perhaps more accurately speaking to eastward, we have two hearths of the same character as we met with on the first occupation surface, consisting of an oblong hearth enclosed with a kerb, and hard by a smaller circular one, the former measuring some 4 feet by 3 feet over all, and the latter about 2 feet in diameter. Beyond the hearths, and lying obliquely in reference to them, is shown another of the curious gutter-like arrangements of stones set on edge. It extended for a distance of 7 feet; where nearest, the stones forming the opposite sides stood some 6 to 8 inches apart at the top, and then converging downwards were some 3 inches apart at the base beneath the floor level. As in the previous instance, the stones were from 8 inches to a foot in height above the ground level. To the south of this site, and close to the margin of the excavation of 1914, there will be observed on the plan the remains of another rectangular oblong hearth paved all over and originally enclosed on three sides with a kerb. Some 3 feet 6 inches to the westward of the open end is an arrangement

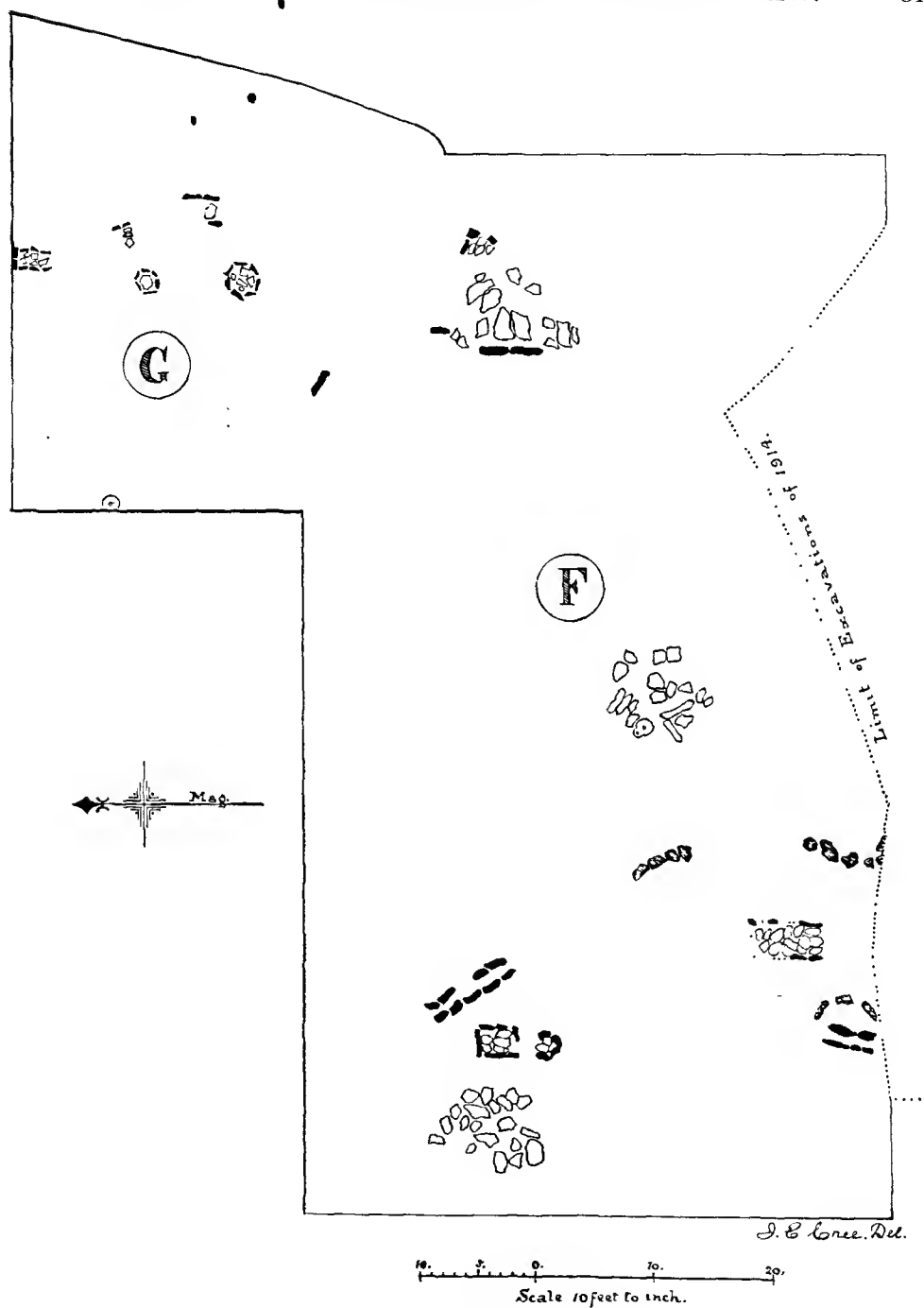


Fig. 13. Plan of Third Level on Areas F and G.

of stones such as we have not met with before on Traprain Law, but which is reminiscent of certain settings of slabs found inside some of the brochs, and denominated hearths (fig. 14). It is an oval setting measuring

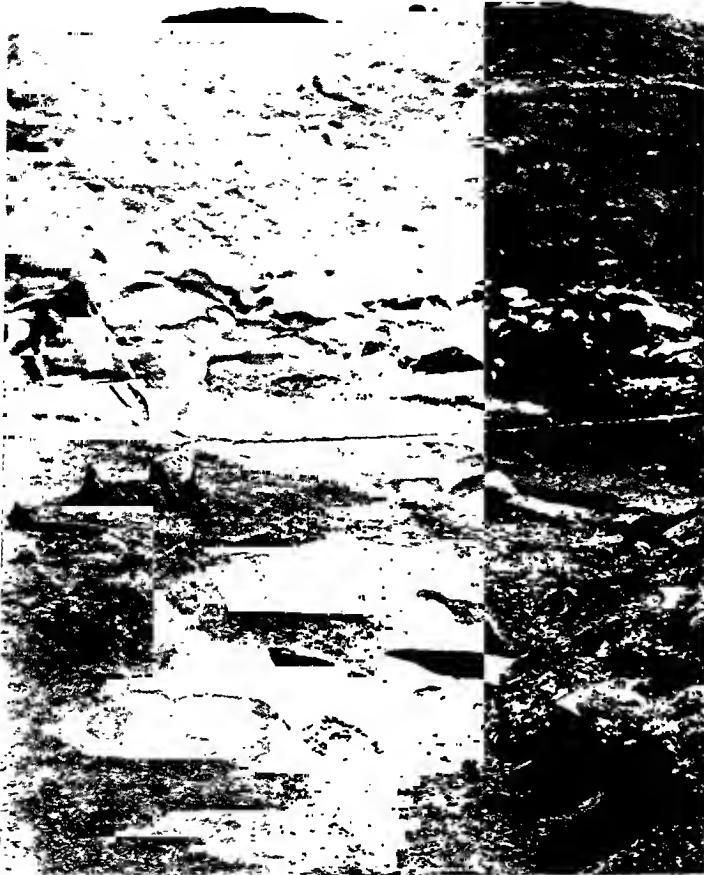


Fig. 14. Oval setting of Stones on the third level of Area F.

internally 4 feet by 3 feet, and formed of five large stones rising from 8 inches to 1 foot 4 inches above the ancient surface level. Against the western side of this, which is approximately straight, and from 10 inches to a foot distant, is placed a parallel line of stones producing an arrangement similar to the other gutter-like settings. If the enclosure to which this setting is attached was a hearth, it differed essentially

from all others we have met with in respect that it was not paved, nor did it show in the interior any evidence of use as a fireplace.

The whole of the area explored had not been in occupation during this period of inhabitation, the ground for a short distance in from the west and north margins being in its natural state.

A bed of clay exposed on the section of G, and overlying the earliest floor, pointed to a partial intermediate occupation; but though a few relics were found on it, no structural remains of any kind survived. A similar intermediate floor was found on area B in 1914.

On clearing away the third occupation level it was found that only a small part of area F had been in occupation at the earliest period. The ground rose somewhat rapidly to northward, and inhabitation of the portion of area F which lies to the west of where the excavated section of G commences was practically confined to the south-west quarter. On this restricted area no remains of foundations or of any structure were laid bare, though the soil was much discoloured and contained a certain amount of bone refuse. There was a complete absence of fibulæ, harness mountings, or personal relics of bronze; pottery was also scarce, though a few pieces of Roman ware came from the very bottom.

To the east of this portion of F, and on the excavated section of G towards the base of the summit escarpment, matters were much more complex. Owing to the inequalities of the original surface of occupation the levels were very difficult to follow; and while on certain spots the earliest period was unrepresented, on others its presence was clearly demonstrated, as well by the black colour of the soil as by the presence in it of pieces of Samian ware seemingly of first-century manufacture. For instance, while the south side of the paving at the extreme east end of F on the third level rested towards the south on the subsoil, towards the north there was beneath it some 6 or 8 inches of forced soil. Similarly, on area G only about one-third of the section explored had been inhabited at the earliest period. Nor were either hearths or paving found in this portion of the area. On both sides of the division line betwixt G and F there lay a bed of charcoal (fig. 15), one crescentic, the other straight; but what their significance might be was not apparent. One other discovery is worthy of remark. Directly below the east side of the paving found at this point in the third level were three small rectangular settings of stones, each placed as it were at one angle of an isosceles triangle whose sides measured 3 feet and base 2 feet. These settings were formed each of three stones from 8 inches to a foot in height, sunk in the earth in a manner similar to those found on the site explored on the terrace and previously referred to. Across the top the spaces enclosed measured 5 inches, 8 inches,

and a foot respectively. In only one was a flat stone observed at the bottom. The suggestion thrown out previously that these were pole-sockets is not rendered less probable by this further discovery. Though the three are shown in a group on the lowest level on the plan (fig. 15), yet as they were all beneath the level of the paving, and in each case not covered by a stone above, it is possible that they may in reality have been connected with the structure on the higher level.

During the course of the summer two additional excavations of small extent were made on the hill. At the south-west extremity of the summit, just where the cliffs turn westward, and towards the very

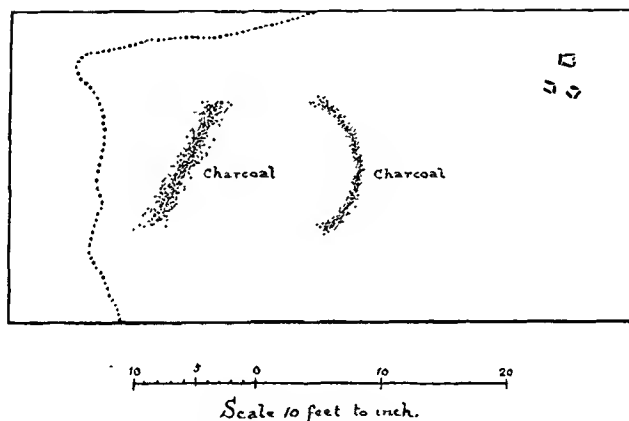


Fig. 15. Beds of Charcoal and small Settings of Stones on the lowest level at the east side of Areas F and G.

edge of the rocks, surface appearances, due largely to the burrowing of rabbits in free soil, indicated the presence of a kitchen-midden. With a view to ascertaining if its contents would throw any light on the period of occupancy of the actual summit, its exploration was undertaken. The soil was very loose, and lay at greatly varying depths over an uneven rocky bottom; it also showed no stratification. The number of bones recovered clearly demonstrated the theory of a kitchen-midden to be correct, but very few relics were recovered in addition to the bones. Some small chips of pottery were found, one or two of them Roman; a fragment or two of clay moulds; a flint which had been used as a strike-a-light; and, directly beneath the turf, one half of an annular bead of opaque green glass, streaked with red as if in imitation of bloodstone (fig. 26, No. 17). The evidence produced was not sufficient to indicate clearly the relation of the midden to any of the

various occupations already noted, but the general character of the pottery suggested the earlier rather than the later group. The bones found are dealt with in the special report by Dr Ritchie printed as an appendix.

To utilise a few hours which remained on the last day of work subsequent to the completion of the filling in of the excavation, a cut was opened across the artificial hollow which lies in rear of the main rampart. This was done to the south-west of our principal area of excavation at a point 84 paces south-east from the termination of the datum line running from the summit and mentioned in the previous Report. No evidence of the original depth or width of the hollow was found, but the natural slope of the hill was reached close to the rampart at a depth of 6 feet 4 inches below the present surface. At a depth of 2 feet what appeared to be a stone paving was met with projecting for a distance of 3 feet from the rampart; at a foot below this there were found an iron tool (apparently a mortising chisel) (fig. 33, No. 1), a piece of Roman blue-green glass, a fragment of coarse native pottery, and a small piece of reddish-brown Roman ware ornamented with a scroll in white engobe (fig. 19, No. 7). This last named, the only piece of its kind so far found, is of a buff-coloured body, a light reddish-brown on the exterior surface, and is coated with a bright orange-red slip in the interior. It is traversed by a band of roulette markings. It is probably a species of Castor ware and of third- or fourth-century date. There does not appear to be any record of similar pottery having been previously met with in Scotland. At a depth of 5 feet a fragment of bronze was found, as well as a quantity of bones. A number of fairly large bones were also found at the bottom. Though this cut across the trench was only a very partial exploration, the evidence points as elsewhere to four definite periods of occupation: the latest represented by the paving, the next by the pottery, and the second in point of time, as well as the earliest, by the bones found at two different levels.

The relics from the subsidiary excavations have been mentioned after the account of the features laid bare on the floor levels from which they were recovered, as their number was small, and as the point of interest in these excavations was the correlation of the levels with those of the principal exploration on areas F and G. With the exception of the kitchen-midden, which disclosed no stratification, each of the other sites revealed the three or four periods of inhabitation with which we have become familiar. But as in our excavation of 1914 we failed to obtain such clear proof of the number of periods, it is necessary, to prevent error, to compare in this connection the result of

our digging in 1914 with that secured in 1915. In 1914 over area B we discovered five periods of occupancy, designated the lowest level, levels 1A, 1B, the second level, and the uppermost level. Of these, three only were found to be general and to extend over the whole of the areas laid bare—the lowest, the second, and the uppermost. Though not distinct enough to record, a still higher level than that noted as the uppermost was suspected, and the existence of this the work of 1915 has clearly demonstrated. Our levels in this Report, therefore, commence with one higher, and thus the second level of 1915 corresponds to the uppermost level of 1914, while the third level of the present Report is the same as the second of the previous one. As for the levels of restricted extent, 1A and 1B, only in G does one or other of these seem to have been encountered in 1915. When, as has been the case in this last summer's work, some of the occupations have been co-extensive with the area explored, while others have not, it can be realised that, on ground which is not flat, there is sometimes great difficulty in determining exactly to what period a given surface belongs. As a matter of fact, however, the four principal surfaces may be divided into pairs, an upper and a lower, since the length of time intervening between the latest period of occupancy of the latter and the earliest period of occupancy of the former has been considerably greater than that between the periods of occupancy of the respective members forming each pair. Similarly, the difference between the Roman pottery belonging to each pair is much more marked than the difference between the Roman pottery of the respective levels which compose them.

The relics recovered are as numerous as those of last year, and are no less remarkable in respect both of their number and variety. The earliest occupation has throughout been the most prolific, and has produced the richest finds. Another point worth noting, although its significance is not yet quite clear, is that nearly all the bow-shaped fibulae which we have hitherto found have come from the east side of the excavation, towards the base of the summit escarpment, pointing perhaps to the inference that it was along this line that the dwellings were for the most part situated.

I. POTTERY.

As was the case in 1914, the two lowest levels yielded much the larger quantity of native pottery. It was coarse, hand-made ware, fashioned from clay containing much grit and pebble. Consequently the surface is very irregular and the fractures jagged. Though on occasions numerous sherds of the same vessel were found, the greatest difficulty was experienced in fitting pieces together. The black encrustation on many

of the pots, both inside and out, pointed to their having been chiefly used as cooking-pots.

It is difficult to give a proper idea of the relative amount of this pottery found on each of the respective occupation surfaces, but it is important to do so, as this fact has a considerable bearing on the duration of the various occupations. We have endeavoured, therefore, to attain this end by stating the amount in terms of weight. The degree of discoloration of the soil on the lowest level, as well as the excess of relics which it produced, pointed to its having been occupied for the longest period. The native pottery which it yielded weighed $10\frac{1}{2}$ lbs., but it must be borne in mind, as stated above, that the stratum concerned only extended over about one half of the ground explored. The level above it, on the other hand, was almost coterminous with the areas excavated, and it yielded 19 lbs. weight; the higher level, No. 2 from the top, $5\frac{1}{2}$ lbs.; and the top level of all only some five sherds with a weight of $\frac{1}{4}$ lb.

The native pottery on the lowest level did not differ in character from that found previously; on the level above, however, *i.e.* No. 3, there came to light sherds of three decorated vessels: one (fig. 16, No. 4) is ornamented with a deep hollow moulding beneath a flat rim, and contains a line of notched impressions; another (fig. 17, No. 1) has belonged to a rather small vessel with a diameter of 3 inches and having a corrugated outline, and is rudely ornamented with the impress of a finger-nail around the shoulder—a form of ornamentation which rather suggests an early period for this pot, possibly even the Bronze Age; and the third (fig. 17, No. 2) is a small fragment displaying a series of oblique impressions upon a flat rim. Pottery with markings similar to the last was found at Knap Hill in Wiltshire,¹ in a settlement showing partially a synchronous culture. The native pottery of the higher levels seems to be made of rather more carefully refined clay, and consequently is smoother in texture; but there is so little of it that any generalisation is unsafe.

Partial reconstructions of several vessels are shown in fig. 16, as follows:

No. 1, from the third level, appears to have been a bowl-shaped vessel, judging from the rapid inward curve of its sides, and has measured some 11 inches in diameter at the mouth. No. 2 has an estimated diameter of 8 inches. No. 3 has been a large cooking-pot, and shows on its walls the discoloration caused by the action of the fire. Its estimated diameter is 10 inches, and the height of the fragment recovered is $11\frac{1}{4}$ inches. Nos. 2 and 3 both came from the third level. Nos. 5 and 6 are both wares of the same class, and quite distinct from the ordinary native

¹ *The Wiltshire Archaeological, etc., Magazine*, vol. xxxvii., plate facing p. 62, fig. 14.

pottery found on the site. No. 5 is thick and black, of markedly vesicular texture, and shows a section which indicates a vessel with an



Fig. 16. Native Hand-made Pottery. (4.)

everted lip, a short neck, and a globular body having an estimated diameter at the mouth of 8 inches. It came from the second level on

the terrace, which should indicate for it a third- or fourth-century date. No. 6 presents the same general character as regards texture: it is, however, lighter in colour, and has been of different form. Its estimated diameter is 4 inches. The sherd is a small one, and its find-spot is unfortunately unrecorded. A third fragment of this ware, seemingly from the shoulder of a large globular vessel, came from the lowest level. This has all the appearance of an imported ware, being entirely different from the ordinary native pottery in material, finish, and form. The style of the lip of No. 5 has a character more suggestive of a late Roman pot, such as is shown in fig. 18, No. 9, than of a native example. The vesicular condition of these pots is said to be due to the presence in the paste of calcide (crystalline carbonate of lime), which

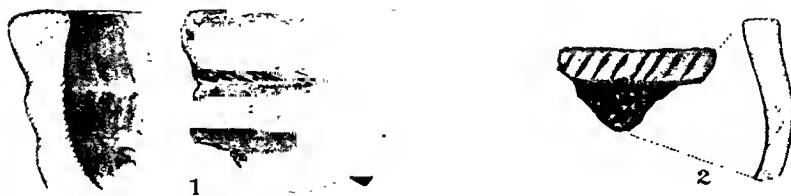


Fig. 17. Sherd of Native Pottery ornamented with finger-nail impressions—from the third level. ($\frac{1}{2}$.)

when subjected to heat exposed in an open wood fire becomes converted into quicklime, and this in its turn being soluble in water and affectable by vegetable acids has been dissolved from the body of the vessel. Similar pottery has been found at Poltross Burn, and specimens are in the Carlisle Museum. No. 7 came from the second level, and should be contemporaneous with No. 5. The clay of which it is fashioned is more refined, and the make is less coarse than that of the majority of native vessels from the lower levels. Its estimated diameter is $5\frac{1}{2}$ inches, and the height of the fragment recovered $3\frac{3}{4}$ inches. No. 8 is a vessel partially reconstructed from pieces found in both seasons' excavations at the upper level, but seemingly the type is not confined to the latest period. The clay is washed or refined, and the surface smooth and somewhat sandy to the touch, while the form of the vessel indicates a beaker rather than a cooking-pot. The estimated diameter is $3\frac{3}{4}$ inches and the height $3\frac{1}{2}$ inches.

II. ROMAN POTTERY.

When we come to consider the quantity of Roman pottery, we are reduced to counting (as far as possible) the sherds of different vessels represented, for owing to its greater variety of quality it cannot satisfactorily be estimated by weight. Proceeding on this principle, however, we arrive at a result on the whole analogous to that of our inquiry concerning the native pottery. Thus we find from the lowest level 14 pots represented, from the third level 25, from the second 21, and from the latest 8. Only as regards the second level does the analogy fail, and here we may consider the presence of a greater proportion of Roman pottery to be due to the increasing effect of Roman influence. This method of computation, however, can only lead to conclusions approximately correct, as it is of course impossible to say how many pots may in reality be represented by several fragments of identical pattern which are reckoned as representing only one; while, on the other hand, errors may arise from counting as pieces of separate vessels sherds belonging to one and the same pot. Between the second and third levels also there may, for reasons previously stated, have been a slight confusion which allowed pottery from the latter to be attributed to the former—a fact apparent from pieces of identical pots having been found on both levels. Notwithstanding these reservations, the general results may be considered fairly trustworthy.

(a) Fragments of Unglazed Roman Pottery.

From the lowest level there came, for the reason given above, comparatively few pieces of pottery:—

A fragment of the mouth of a jug of reddish ware, with corrugations under the lip-moulding similar to fig. 18, No. 7. Such jugs were represented by a number of pieces found at Newstead in circumstances which pointed to their belonging to the early occupation of the fort in the end of the first century.

Fragments of the rim of a cooking-pot of black ware decorated with scored lattice ornament. A piece of a rim with identical section was found in 1914 on the level above this, and is illustrated in the previous Report.¹

A small fragment of the rim of a vessel of a hard, fine, light-red ware. Other pieces of this ware were found in 1914 on the main level above this; their curvature and weight indicate that they belonged to a large vessel, probably a bowl. Part of the handle of a jug of light buff ware with a single groove down the centre, and a small sherd decorated

¹ *Proceedings*, vol. xlix., fig. 10, No. 9, and fig. 16, No. 4.

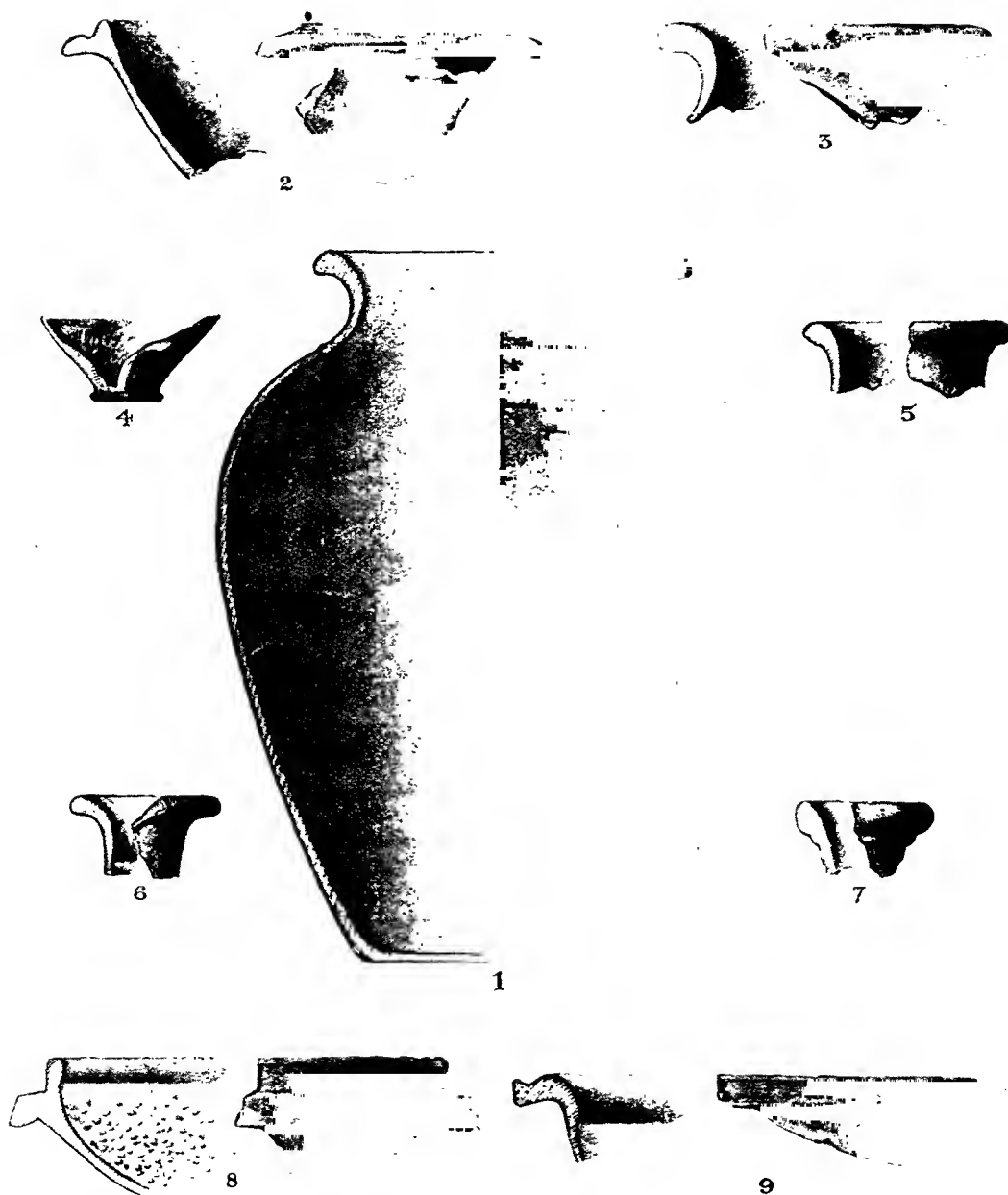


Fig. 18. Unglazed Roman Pottery. (3.)

with pellets in barbotine (fig. 19, No. 12). The ware of the latter is grey, coated with a darker slip. Similar ware has been found at Wroxeter.¹ We shall meet with more of it from the immediately superincumbent level.

From the third level:—

Fig. 18, No. 1. The greater part of a large vase or urn of light red-coloured ware, grey in fracture, with an everted lip and mouldings at the neck and at the shoulder. This vessel appears to resemble an urn found at Newstead² and dated to the later period of the occupation of the fort in the second century. One or two pieces of it came from the second level, but the bulk of it was found on the third, which may thus be counted its correct provenance.

Fig. 18, No. 4. The base of a vase of red body, black on both surfaces; there are indications of a band of roulette markings on the side; the base has a projecting edge.

Fig. 18, No. 5. Portion amounting to about three-quarters of the rim of a vase of light grey ware; diameter of mouth $3\frac{1}{2}$ inches.

Fig. 18, No. 7. Portion of the rim and neck of a jug of reddish ware, with corrugations round the neck, similar to the fragment found on the lowest level.

Fig. 19, No. 8. Portion of the rim and part of the side of a small vessel of bright red ware.

Fig. 19, Nos. 6 and 14. Four pieces of grey ware, two of which are illustrated, ornamented with small pellets applied in barbotine. This ware is the same as that mentioned above as having been found in the lowest level.

There are also several fragments of Rhenish ware, red in body, coated with a black slip, and ornamented with a spiral pattern in white engobe and a band of roulette impressions round the shoulder (fig. 19, No. 4).

A number of pieces of this pottery were also found on the top and second levels. It is a late ware, in vogue chiefly in the third century, though it makes its appearance in the second, and the vessels are not infrequently inscribed with names or with words or expressions of a convivial character. None of this ware was found at Newstead.

Fig. 19, No. 17. A triangular sherd of a dark grey ware ornamented with a band beneath an incised line of small applied pellets in barbotine, part of a globular vessel.

Segment of a rim—considerably everted and rather sharp in out-

¹ Reports of the Research Committee of the Society of Antiquaries of London, *Wroxeter Report*, 2, pl. xv, figs. 11 and 13.

² *A Roman Frontier Post*, p. 253, pl. 1, (A), 3.



Fig. 19. Miscellaneous fragments of unglazed Roman Pottery.

line—of a dark grey vessel which seems to have been decorated with impressed scrolls. The rim of a similar section was found on the bottom level last year.

Portion of the mouth of a mortarium of reddish ware.

Fragment of the handle of an amphora of yellow ware.

From the second level the fragments are more numerous:—

Fig. 18, No. 8. Portion of a mortarium of a rather slight, orange-red ware, coated with a thin red slip; about half an inch below the edge of the rim is a flange, somewhat hollow on the under side: pressed into the body in the interior are numerous small grains of quartz. This approximates to the bowl form (Dragendorff, 38), and may be compared with sherds found at Pevensey.¹



Fig. 20. Miscellaneous fragments of unglazed Roman Pottery with impressed ornamentation. (½.)

Fig. 18, No. 9. Portions of the lip of a vessel of similar orange-red ware, covered with a red slip; a broad rim, flat on the under side, but with an ogee curve on the top. This is a late type of bowl, possibly derived from Dragendorff, type 36, and may also be compared with sherds found at Pevensey² as well as at Sandford Farm, Littlemore, near Oxford, the latter preserved in the Ashmolean Museum.

Fig. 18, No. 3. Part of the mouth of a large jar of rather soft grey ware, the rim considerably everted; diameter of mouth $5\frac{1}{4}$ inches.

Fig. 19, No. 13. Sherd of a vessel of hard grey ware, marked with a band of roulette impressions.

Fig. 20, No. 2. Fragment of the side of a vase of a rather fine light-brown ware, ornamented with a band of roulette markings on the shoulder, coated with a black slip in the interior.

¹ *Sussex Archaeological Collections*, lii. pl. 9, fig. 2.

² *Ibid.*, lii. pl. 9, fig. 7.

Fig. 18, No. 2. Rather more than one-half of the rim and a portion of the side of a bowl of hard grey ware; diameter $6\frac{3}{4}$ inches.

Fig. 19, Nos. 2 and 3. Several pieces of black Rhenish ware, ornamented with a white engobe; one fragment bearing three circular white spots.

Small portion of a dark brown cooking-pot with lattice ornament.

Fragment of a large vessel of grey ware, showing on the outer surface the ends of three lightly incised, vertical impressions.

Portion, amounting to about one-half of the base, of a vase of reddish ware, coated with a black slip.

Fig. 19, No. 9. A small sherd of greyish ware ornamented with impressed scrolls.

Fig. 19, No. 11. A small sherd of hard grey ware ornamented with roulette markings.

A fragment of the rim of a mortarium of reddish-yellow ware, much incurved, seemingly an early second-century type.

A small portion of hard grey ware surrounded by a band, of burnished surface, with impressed vertical lines beneath it.

Portion of a vessel with a highly metallic brown glaze on the outside.

On the top level there were found pieces of four different Roman pots:—

Fig. 19, No. 5. Found immediately below the turf. A four-sided fragment of grey ware, ornamented with a series of parallel wavy lines probably made with a comb.

Fig. 19, No. 16. A small sherd of rather thick grey ware, whitish in fracture, ornamented on the outside with a band, $\frac{1}{2}$ of an inch in breadth, of close vertical impressions, produced with a roulette.

Fig. 20, No. 1. A piece, evidently the bottom, of a large bowl of reddish ware resembling Samian, but without the semi-lustrous glaze: grey in fracture; ornamented in the interior with double lines of impressions, seemingly made with a twisted cord, about $\frac{5}{8}$ inch apart.

A small sherd of orange-red ware, which appears to have been covered with a yellow slip. Pieces of the same ware were found last year on the lowest level of area B; its occurrence here must consequently be regarded as accidental.

Two or three pieces of black Rhenish ware, decorated with white engobe, of which one is illustrated (fig. 19, No. 1).

(b) *Samian Ware.*

From the lowest levels on the various sites excavated there were recovered nine pieces of Samian, including those found on the terrace and already dealt with. They probably represent eight different vessels. The largest piece is a portion of the side and lip of a platter (Dragen-

dorff, type 18). There is from areas FG one piece only of decorated ware (fig. 21, No. 1), seemingly of type Dragendorff 37, showing a lion, head awanting, rushing through reeds.

From the third levels on the various sites there have been obtained seventeen small fragments, probably representing eleven or twelve different vessels. Four are pieces of decorated bowls (Dragendorff, type 37); one shows a portion of an egg-and-dart border, another portions of two oak leaves, another the remains of a border composed of detached three-cusped leaves (fig. 21, No. 2), and the last nothing distinctive.

From the second level came six fragments representing probably six different vessels, one of which is probably also represented on the

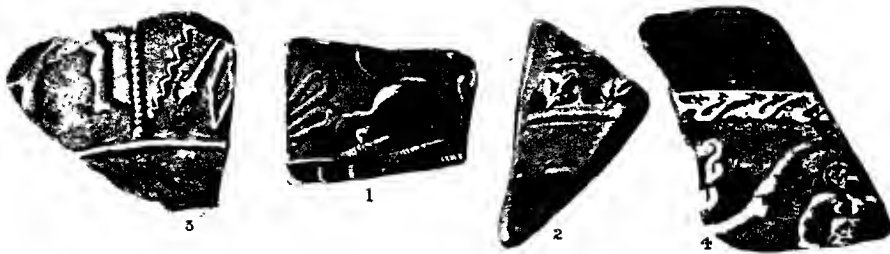


Fig. 21. Fragments of decorated Samian Ware. (3.)

lowest level by the sherd with a charging lion. The only decorated fragment of any moment (fig. 21, No. 4) shows the upper part of a gladiator wearing a helmet, and holding a short sword in his right hand; the upper border consists of repeating loops placed obliquely; the glaze is somewhat dull, and the ware rather light in colour.

From the highest level there were recovered six small fragments representing probably five different vessels, though at least two seem to be parts of vessels also represented at lower levels. There are two decorated fragments of bowls, type 37, the one (fig. 21, No. 3) showing what is apparently a late variant of the ordinary cruciform design, and the other having on it part of a chevron border. The latter probably belonged to the bowl of which the fragment with a charging lion from the lowest level is a part.

III. PERSONAL ORNAMENTS.

As in our previous Report, we include under this head fibulæ, pins, finger-rings, dress-fasteners, bracelets, beads of glass, etc.

Fibulæ.—During the excavation there were recovered fourteen fibulæ, not all complete, of which five were bow fibulæ, seven were penannular, and two were flat plates of iron falling into neither of the usual

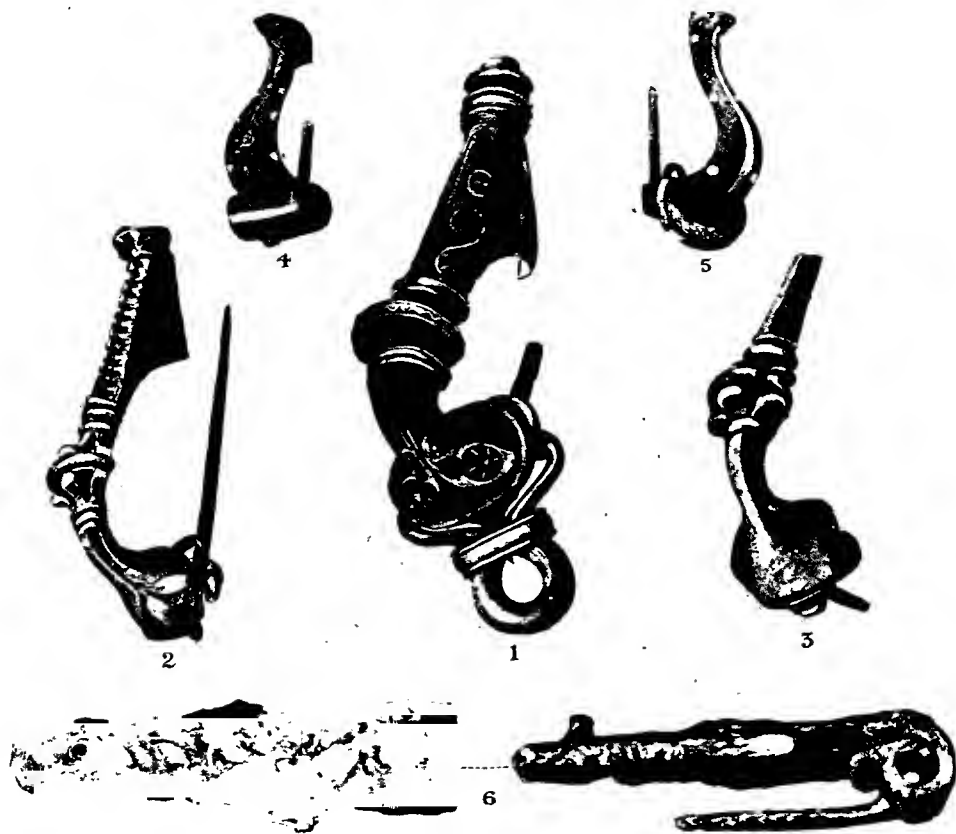


Fig. 22. Fibulæ of Bronze and Iron. ($\frac{1}{4}$.)

categories. The bow fibulæ all came from the third or fourth level, and may thus safely be assumed to belong to a period extending from the end of the first to the end of the second century. Two of them (fig. 22. Nos. 4 and 5) are of the type known as knee fibulæ, and both were found on the third level. No. 4, which is $1\frac{1}{2}$ inch in length, has been ornamented with silver. At the centre of the bow there has been inlaid a six-pointed

star, of which only a spot of silver in the centre remains; along the semi-cylindrical casing that holds the spring is a band of silver inlay; and four pellets have occurred at regular intervals along each side of the bow. At the foot indications suggest that there has here also been a cresting of silver. Silver plating in the form of a rosette at the side and a short bar above the spring cover was observed on one of the knee fibulæ from the lowest level of area A in 1914 (*Proceedings*, vol. xlix. p. 28, fig. 23, No. 4). Fig. 22, No. 5, the other knee fibula, measures $1\frac{3}{16}$ inch in length. The head projects over the spring in a fan-shape, and parallel with its outer margin is a crescentic band of yellow enamel; a band of silver inlay has extended the full length of the bow, and there have been three pellets of the same material placed equidistant along each side. An almost identical fibula was found by General Pitt Rivers at Rushmore.¹

Fig. 22, No. 1, is a remarkably fine bow-shaped fibula which has, like the two preceding examples, been enriched with silver inlay. Its extreme length to the end of the loop at the head is 3 inches. The brooch is of an unusually massive type, and is singularly complete, though much of the actual silver has disappeared from the channels which held it. On either side of the head are two leaf-shaped figures divided near their centres on either side by cusps. In the lower division thus formed in each is a six-pointed star, and there are also indications in the upper division of some design, the exact character of which is not now certain. Towards the centre of the bow the surface is decayed and the pattern no longer ascertainable; but the existence of a small piece of silver shows that the inlaying had originally extended over the whole length of the head. The centre of the bow consists of a disc-like ornament between two collars, from which it is separated on each side by a hollow moulding. A wavy line of silver is inlaid on the flat edge of the disc. Towards the foot the bow is moulded to a slight ridge along the crest, while on the sides there appears, from the lower collar, an S scroll containing in each curve a six-pointed star, followed by a figure resembling the letter M, from which an indeterminate inlay has extended to the terminal. This consists of three plain convex mouldings, and a boss surmounting a disc. The catch-plate is solid and without ornament. The pin has worked upon a coiled spring, and a wire passed through the latter axially has formed a loop for attachment to a chain. The loop is unusually heavy, and is drawn in with a collar. To maintain it and the brooch at the same relative angle to one another, a thin triangular plate of metal acts as a spring, two points being curved inwards

¹ *Excavations in Cranborne Chase*, vol. i. pl. x. fig. 7.

towards the spring coil, while the third projects with a sharp point through the collar on the loop and retains the latter in position. This fibula resembles one found at Wilderspool near Warrington, and described¹ as being ornamented with incuse spirals enclosing triangles.

Silver inlay, though not common on the bronze fibulae of this period, has been observed in other instances. A fine penannular brooch of bronze, with flattened terminals inlaid in this manner, was found in the pit in the principia at Newstead,² and was dated to the latter half of the second century. As the brooch from Traprain Law was, however, found at the lowest or fourth level, it probably belongs to a somewhat earlier period.

Fig. 22, No. 2, is another bow-shaped fibula of bronze $2\frac{1}{4}$ inches in length; it is nearly complete except for the loop at the back, which is wanting. The brooch has been beautifully enamelled in crimson and blue. On the head a three-leaved figure in the latter colour is set in a field of crimson which has extended up towards the collar delimiting the central ornament, but which gives place at that point to two small triangular settings of blue enamel. The knob in the centre of the bow has been floriated and crisply fashioned. On either side of the end of the brooch, reaching to the foot, have been numerous small settings of crimson enamel, of which only traces now remain. The pin has worked on a spring. The fibula came from the third level on area F, but towards the east side of it, at a spot where there was a little ambiguity concerning the two lowest levels. It may therefore belong to an early period in the second century.

Fig. 22, No. 3, is another bow-shaped fibula of bronze, of which the foot is wanting. It has no ornamentation other than the floriated knob, which is more poorly executed and lacks the sharpness of that in the previous example. It came from the fourth level on area G.

Fig. 22, No. 6. The fibula here illustrated is of iron, and is fashioned from a single plate with a length of $2\frac{3}{16}$ inches. A spring has been formed by coiling the end of the plate, while the pin, which was of bronze, has passed up the back of this in a groove. There is no sign of a catch-plate remaining. A single point at the foot stands up like a pin, and along the sides there appear to have been triangular projections voided in the centre, only one of which survives. This fibula came from the third level on area A on the terrace, and the head half of a similar one was found on the lowest level on area F; the period to which they belong is therefore probably early in the second century.

So far we have been able to find no parallels for the type which

¹ May, *Warrington's Roman Remains*, p. 81.

² *A Roman Frontier Post*, p. 327, pl. lxxxviii. fig. 7.

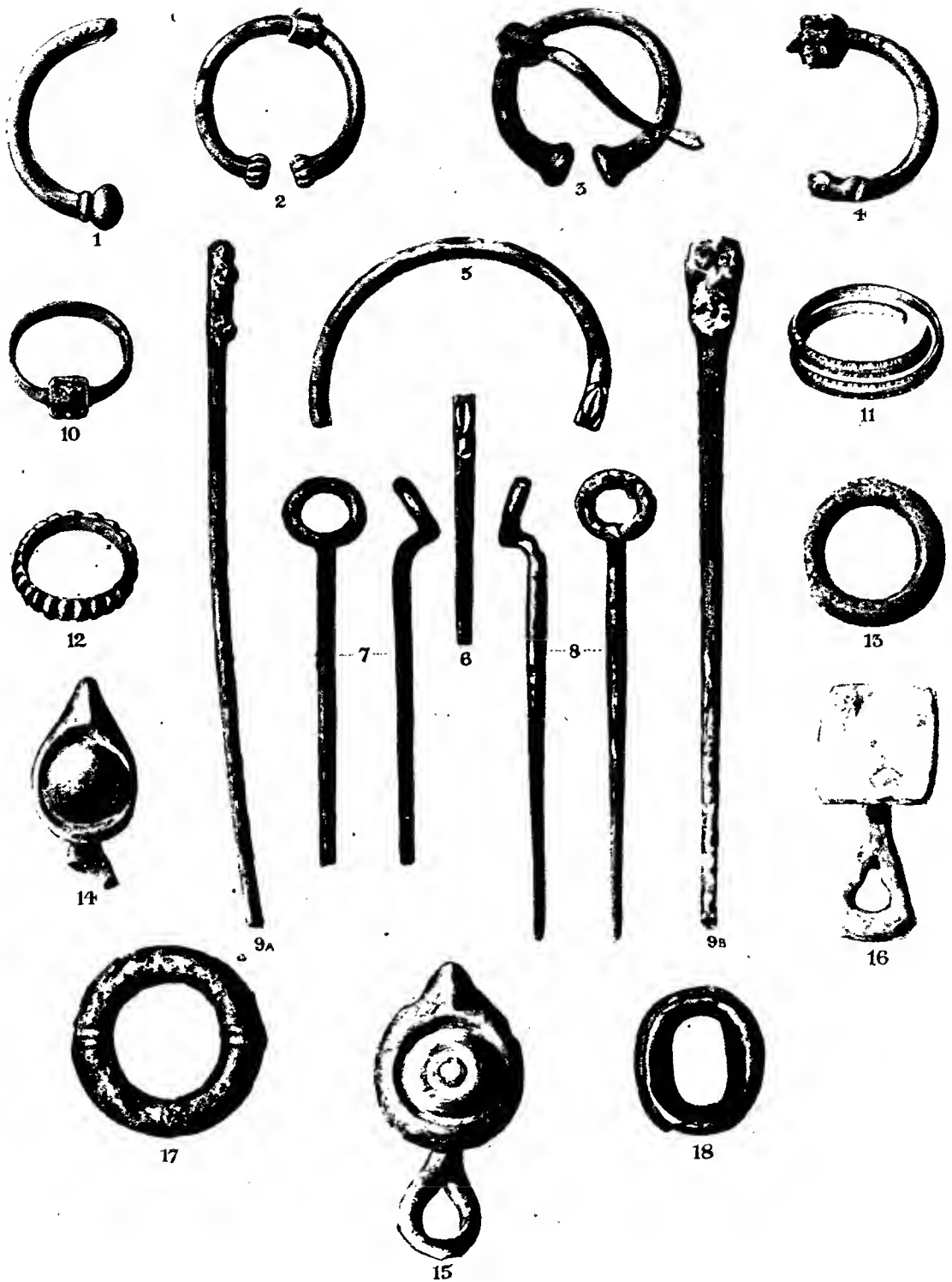


Fig. 23. Penannular Fibulae, Pins, Finger-rings, Dress-fasteners, etc. (I.)

resembles, though remotely at best, the later Teutonic fibulae rather than those of La Tène, with which it seems to have no affinity.

Among the penannular fibulae there are three of identical type, represented by fig. 23, No. 2, with fluted knobs for terminals. Two such fibulae were found in 1914 (*Proceedings*, vol. xlix. p. 165, fig. 22); they have also been found at Newstead and elsewhere. The frequency of their occurrence on Traprain Law clearly points to their Celtic origin. The three all came from the third level, and thus may be considered as of second-century date.

Fig. 23, No. 3, is another form of small penannular fibula, the ring of which increases in thickness towards the terminals, which are not fluted. It measures $1\frac{1}{16}$ inch across; it also came from the third level.

The half fibula (fig. 23, No. 1), with a biconical knob preceded by a collar for a terminal, came from the lowest or fourth level, and should thus be a little earlier in date than those of this type previously mentioned.

Fig. 23, No. 4. The fibula, of which this represents one-half, has measured about 1 inch in diameter, and has been furnished with an iron pin, of which the loop alone remains. The terminal has been formed in such a way as to make it appear that

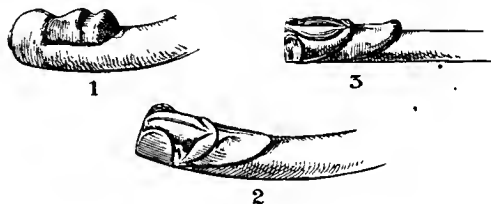


Fig. 24. Diagram enlarged to $1\frac{1}{2}$ actual size to show Zoomorphic Terminals of Fibula and Pin (fig. 23, Nos. 4, 5, and 6).

the end has been turned back on the upper surface of the ring, and it has been seemingly fashioned into a zoomorphic form. A fibula with a very similar terminal was found many years ago in the entrenched fort of Caerlep, Anglesey,¹ while a ring of bent wire found in the Retentura at Newstead bore a similar device on one extremity.² One half of a brooch which appears to have had a diameter of $1\frac{3}{4}$ inch is shown in fig. 23, No. 5. It also has terminated with a zoomorphic ornament which appears to have been derived from an animal's head, the ears or eyes of which may possibly be represented by the two projecting points at the end. The designs of this and of the foregoing terminal are shown drawn to $1\frac{1}{2}$ actual size in fig. 24, Nos. 1 and 2. Both came from the third level, and may thus be attributed to the second century.

Pins.—Four pins of bronze with the head portions complete were recovered, as well as several pieces of the stems of others. The four all came from the third level.

¹ *Archæologia Cambrensis*, xii., 1866, plate following p. 214.

² *A Roman Frontier Post*, pl. lxxxviii. fig. 4.



Fig. 23, Nos. 9A and 9B, measures 4 inches in length, but the point is wanting; it is furnished with a head which expands gradually from the stem to its extremity; it is quite flat at the back, but in front it has a suboval form with a slight projection from the plane of the stem. The surface is much decayed. Fig. 23, Nos. 7 and 8, are two shoulder-pins with annular heads, formed from a wire of circular section. A similar pin was found in 1914, and as the recorded analogies from Scotland are noted in the previous Report,¹ p. 171, they need not be repeated here. The fourth pin is represented by the upper portion only. It is furnished with a head which appears to be zoomorphic; the ears are represented at the extremity on each side, but do not project to the higher plane. This object is shown to a $1\frac{1}{2}$ actual size scale in fig. 24, No. 3. It differs but slightly from the terminal of the penannular brooch No. 5 of fig. 23.

Though the peculiar ornamentation displayed on this pin-head, as well as on the terminal of the penannular brooch (fig. 23, No. 5) mentioned above, shows certain features which suggest its derivation from some such device as that employed to terminate the massive armlet of bronze found many years ago on the Culbin Sands, and preserved at Altyre,² its prototype is not by any means certain. There does, however, appear to be a close connection between it and the form of pin-head found on Traprain Law in 1914, and illustrated in last year's Report,³ as well as a pin-head recovered at Newstead.⁴ Both of these examples show below the final and straight-sided division of the terminal an upper loop formed by a moulding and extending down the pin. As seen in the front view, Nos. 5 and 6 of fig. 23 exhibit this feature very clearly in these more recent finds. But, while the origin of the type may be somewhat obscure, and the steps needed to trace it backwards to its source not yet apparent, there is no difficulty in linking it on to its line of successors. Mr Reginald Smith has traced out the development of the Celtic penannular brooch over a period of five centuries,⁵ and has taken as his starting-point a form similar to that of a brooch found in the Dowkerbottom Cave at Ulton in Derbyshire, the peculiar and arresting features of which are the terminals. On the upper surface is a clearly defined oval or lozenge, formed by scoring off the angles with an incised line; while, in contrast to the section of the rest of the brooch, which is circular, that of the terminals is square. The resemblance to our Traprain Law terminals is at once apparent, and since the publication of his original article Mr Smith has drawn atten-

¹ *Proceedings*, vol. xlix.

² *Ibid.*, vol. xxv. p. 505, fig. 30.

³ *Ibid.*, vol. xlix. p. 172, fig. 25, No. 1.

⁴ *A Roman Frontier Post*, p. 357, pl. xcii. fig. 11.

⁵ *Archæologia*, vol. lxxv. p. 223.

tion¹ to the discovery of a penannular brooch at Stratford-on-Avon which appears to form a connecting link between the Scottish specimens and that from Dowkerbottom Cave. While on the last mentioned the upper loop has given place to a series of annular mouldings, and the medial groove which divides the oval on the Scottish examples has also disappeared, on the Stratford brooch, the loop feature with apparently a central ridge remains, as does also the medial groove. We have, therefore, in these forms from Traprain Law the germ of ornament from which such masterpieces as the Hunterstone brooch and others like it ultimately developed some six or seven centuries later.

Finger-rings.—The number of finger-rings found last season was four. Of these, two are of bronze and two of silver. Only one, fig. 23, No. 10, of bronze, came from the earliest level. It is formed from a thin band of bronze, and has in front a small square bezel of iron, the surface of which is raised in the centre, but it is so corroded that the recognition of any device on it is no longer possible. The three other rings all came from the top level, which implies for them a fourth- to fifth-century date.

Fig. 23, No. 12, of silver, $\frac{3}{4}$ inch in diameter, is flat on the inner, and segmented on the outer, surface. A small ring of bronze for attachment to a chain, similarly fashioned, was found at Mildenhall, Suffolk, along with an enamelled escutcheon for a hanging bowl, and other enamelled relics,² which are given a sixth- or seventh-century attribution.

Fig. 23, No. 11, also of silver, is a spiral ring, imperfect, and consisting of rather less than two complete coils. It is ornamented on both edges with continuous relief markings consisting of pairs of short vertical lines with broader prominences between bearing some resemblance to an egg and dart border. This is an undoubted derivative of the bronze spiral rings, one of which was found on the lowest level in 1914, and was illustrated in the previous Report,³ where the occurrence of other similar finds is noted. In the earlier examples the ornamentation, where any exists, consists of a series of notches at either end of the coil. The fourth ring (fig. 23, No. 13), which is included among the finger-rings by reason of its size ($\frac{7}{8}$ inch over all), is a plain ring of bronze, a pointed oval in section.

Fig. 23, No. 17, shows another ring of bronze, plano-convex in section, with a diameter over all of $1\frac{3}{16}$ inch. On the circumference there is a slight swelling at two points opposite each other, as if the ring had originally formed part of a brooch or buckle.

Another ring-like object of bronze is shown by fig. 23, No. 18. It is oval in form, convex on the outer circumference, with a plain moulding

¹ *Proc. Soc. Ant. Lond.*, vol. xxvii. p. 96, fig. 3.

² *Ibid.*, second series, vol. xxii. p. 74, fig. 4.

³ *Proceedings*, vol. xlix. fig. 26, No. 5.

on each edge. In the centre is an oblong opening, and the metal which fills the space around it is countersunk on both faces as if to hold a setting. It resembles a locket such as in recent times was used to hold a miniature photograph.

Dress-fasteners or Clasps.—Of these articles, which may have been used on dress or harness, three complete examples and one fragment have been recovered, all of bronze. Fig. 23, No. 14, is from the lowest level. It measures $1\frac{3}{16}$ inch in length, is a pointed oval in form, and has a large hemispherical boss in the centre: the loop for attachment is imperfect. This design is a characteristic and common late Celtic pattern. Similar objects were found at Newstead, and the pointed oval with the surmounting boss may be seen in the bronze ornament from the Stanhope hoard, probably a harness mounting, in the National Collection, as well as in the rich assortment of harness mountings from Middlebie, also preserved there. Fig. 23, No. 15, shows another clasp of similar design. The boss on it, however, is less prominent, being slightly flattened, and it is, moreover, enriched with a spot of bright blue enamel in the centre. As this object came from the third level, which may be said to correspond with the Antonine period of the Roman occupation in the second century, it is probably slightly later in date than the last. The boldness of design and sharpness of execution which characterise fig. 23, No. 14, are lacking in this example, which has a clumsier and more lumpy appearance. The third clasp (fig. 23, No. 16) resembles one found in 1914. It is formed of a square plate, undecorated, and has a triangular loop. It came from the third level, as did also the fragment of like design mentioned above. That this class with the square plate was likewise of native manufacture is satisfactorily shown by the discovery of a mould for casting such a clasp, to be described below.

Bracelets of Jet.—Fragments of bracelets or armlets, etc., of jet, shale, and lignite are again numerous in the collection. There are remains of fifteen of them, and also a portion of a ring. With one exception they came from either the third or the fourth level. As they show no essential differences from the pieces found in the previous summer's excavation, none of them are illustrated here. It may be remarked, however, that the estimated size of these bracelets, instead of being confined to dimensions suitable only for the wrists of women or children, as is the case with the glass bracelets, is in some instances large enough to admit of their use by men, the diameters varying from $2\frac{1}{8}$ to $3\frac{1}{4}$ inches. Such bracelets have been found on numerous Scottish sites of the Iron Age—such as hut circles, brochs, crannogs, caves, etc.

Bracelets of Glass.—The number of glass armlets represented by the

fragments recovered from last season's excavation is thirty-five, and of these no fewer than thirty came from the two earliest periods of inhabitation. In the first place we can divide them into two main classes—the simple self-coloured specimens and the ornamented varieties. The self-coloured armlets again are of two kinds—a rather heavy variety, markedly triangular in cross section, and in colour either rich chrome yellow, greenish-yellow, or opaque white. These are represented by Nos. 1, 2, 8, and 12 on fig. 25. The estimated diameter of each is from $2\frac{1}{4}$ to $2\frac{3}{8}$ inches, and all came from the two lowest levels. The other variety is shown by the segment, fig. 25, No. 3. It is invariably an opaque milky white, with a rather high polish on the outer surface; the cross section, which more nearly approaches a semi-oval than a triangle, is of smaller dimensions in every respect, while the estimated diameter of the specimen illustrated is only $2\frac{1}{8}$ inches. Of this class there were eight bracelets, all found either on the third or the lowest level, with one exception (which was on the second).

The ornamented varieties may also be divided into classes—those which have apparently been fashioned into segments and worn with metal mounts, and those which have been worn as complete homogeneous rings. Fig. 25, Nos. 4, 5, 6, and 10, are of the former class, and Nos. 7, 9, 11, 12, 13, and 14 are of the latter. Nos. 5 and 6 are evidently complete segments, and it will be observed that at either end of each the surface has been cut down so as to reduce the diameter and form a neck. The only conceivable object for such treatment would be to apply a metal collar or mount in order to join two segments together. As each of the portions so treated has a considerable amount of yellow enamel in its ornamentation, it seems probable that the mounting was of gold, the metal that would harmonise to best advantage with the other colours in the bracelet. It may further be remarked that the segments have been cut subsequent to the completion of the bracelet. No. 4, from the third level, has a core of white opaque glass which has been coated with bands of yellow, green, and red, crossing it obliquely. No. 5, also from the third level, is of translucent green, ornamented with irregularly stepped oblique markings of yellow. No. 6, from the second level, has a grey opaque core, over which there is a coat of yellow opaque enamel traversed by a band of red enamel now almost entirely lost. No. 10, from the third level, is a very beautiful fragment of pale blue translucent glass, triangular in section, coated with translucent sapphire blue, and bearing along each side, at the base, and at the apex cord mouldings of blue and white. At intervals on the flat sides, alternating between the mouldings, occur oval spots of bright yellow enamel. The bracelets which have been complete rings of glass show practically the same treatment in each

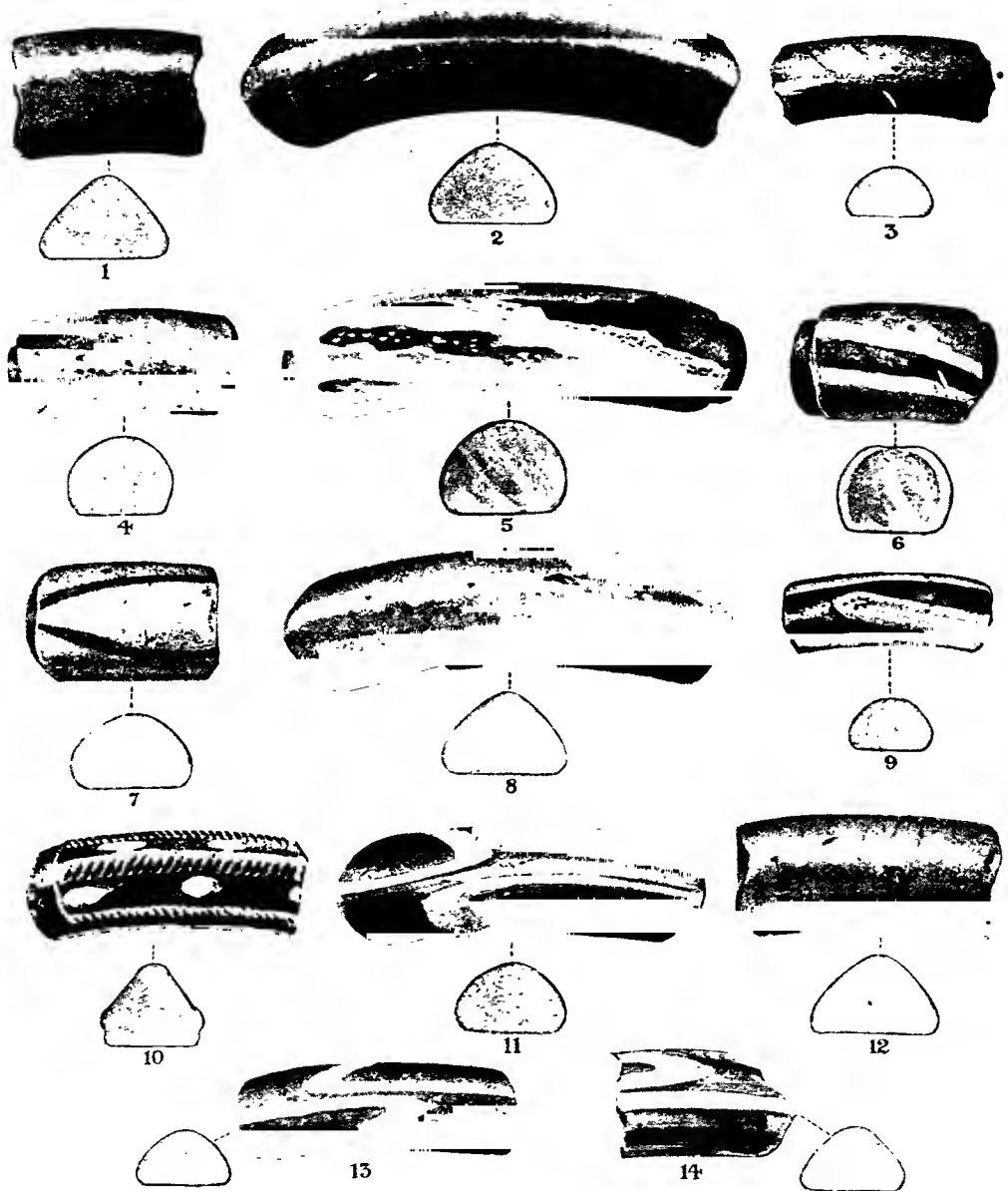


Fig. 25. Segments of Glass Bracelets. (4.)

case, namely, the application to the surface of a rod of white opaque material which was given a hook-like termination as it was broken or cut off. No. 11, from the third level, is of olive-green opaque glass ornamented with white opaque lines. No. 13, from the second level, is of identical material and ornamentation, but is slightly narrower in section. No. 9, from the third level, is of pale green translucent glass, with similar ornamentation; and No. 14, from the uppermost level, is of pale blue translucent glass, and has been ornamented in like manner. There is yet another style of ornamentation employed, which is revealed in one small fragment, No. 7. This is a piece of a bracelet, from the third level, of white opaque glass, showing a portion of ornament consisting of two thin converging lines of pale blue colour. A peculiar feature of the fragment is that one end (that to the outside in the illustration) has been rubbed down to a smooth surface for some purpose which is not apparent.

Different methods have been employed in the ornamentation of these decorated bracelets. To produce the various bands of decoration, the white core of No. 4 has apparently been painted over with thin coats of enamel colour, which have been only partially fused. The enamel as viewed in section forms an extremely thin layer. In the case of No. 5 the enamel has been applied more thickly and has sunk more deeply into the core; the fusing of the enamel has, however, been somewhat imperfect, and the surface has a granular texture. In the case of No. 6 the core has in the first instance been enveloped, except on the inner surface, with a skin of yellow enamel, through which a groove seems to have been channelled while the material was soft, and then in its turn filled with crimson enamel. The thin blue lines on No. 7 have evidently been produced from enamel colour drawn on with some fine point, which on fusing has sunk into the surface of the bracelet. The cord mouldings as well as the yellow spots on No. 10 have clearly been applied during a secondary process of heating. The method of decoration by the white opaque canes that appear in Nos. 9, 11, 13, and 14 is quite obvious, as the white lines stand out in relief on the surface.

The method of manufacture of these bracelets was probably somewhat as follows:—From the molten glass prepared to the required colour a rod was fashioned by pouring out a sufficient quantity to fill a mould cut for a straight bar, from 4 to 5 inches in length, and having the required sectional form, in the majority of cases approximately triangular. The mould, possibly of clay, to obtain a fine surface, would be heated to receive the glass, so as to allow the latter to cool slowly and acquire thereby the requisite toughness, a necessary detail in glass-making. After it had cooled, the rod would be removed from the mould, once

more softened in the heat, and in its pliant condition twisted around a mandril, which the artificer kept turning in his hand. During the process of turning, and before the glass cooled, the ornamentation would be applied in most cases either in the shape of canes of white opaque glass made plastic by heat, or by the application of enamel paint. It is possible, however, that in the latter case the enamel was applied to the bracelet after it was cooled, and that to fuse it the bracelet was subjected to a third application of the fire. An examination of the inner surfaces of these bracelets shows that they have received their form in a different manner from the convex or outer surface, the inner being more striated and pitted than the other, and having small particles of foreign substances pressed into them. On none is there any sign of a seam such as would be left at the junction of a bipartite mould if such had been used to produce them. So far we cannot say that there is evidence of the manufacture of bracelets on Traprain Law. Neither clay moulds of the requisite form, portions of rods of glass such as might have been used in process of formation into bracelets, nor a trace of a mandril, have been recovered.

Such bracelets are found on the Continent, referable to the La Tène periods—many of them in graves, and always in the graves of women. During the second La Tène period they were particularly abundant in Switzerland, says Déchelette, notably in the region of Berne. The manufacture continued on the Continent throughout the third La Tène period, and those then produced were ordinarily of a deep violet or violet-amethyst colour, in single tone, without ornament. They were largely exported, and “even reached the most westerly regions of Gaul,” where in 1888, near Morbihan, a labourer found a number in an earthenware pot, with other relics of the first century B.C. Déchelette makes the statement that these objects were made in moulds, but does not explain the process.

So far the earliest bracelets from Traprain Law appear to be the plain self-coloured varieties approximating to the type of La Tène III., whereas the later ones show a reversion to the more highly ornamented varieties of a more remote period. Bracelets of glass do not seem to be met with in England with such frequency as they are in the northern part of the kingdom, where they have been recovered from caves, crannogs, and forts, some of the forts being Roman and some of native origin. Two fragments have also been recovered from brochs—one a segment of an opaque white bracelet with triangular section, from the broch of Edin’s Hall in Berwickshire; and the other a small portion of a bracelet of translucent green glass ornamented with loops of opaque yellow glass or enamel from the broch of Torwoodlee, Selkirk-

shire. The northern brochs do not seem, so far, to have yielded any fragments of these ornaments.

Beads.—The beads, complete or fragmentary, found last summer number nineteen. They are all small and inconspicuous objects, the largest being less than half an inch in diameter; and so far none of the finer Celtic beads, such as those ornamented with inlaid ornament or furnished with protuberances, have been noticed. Eight of the beads recovered are formed from yellow vitreous paste (fig. 26, Nos. 1 to 6), a material employed for the manufacture of beads on Celtic sites, and also, as mentioned above, used for bracelets. Of this material seven are beads of the usual flattened or disc shape, while one is globular and of very small size. The period during which these beads were in fashion on Traprain Law admits of little doubt, for, with the exception of one fragment from the second

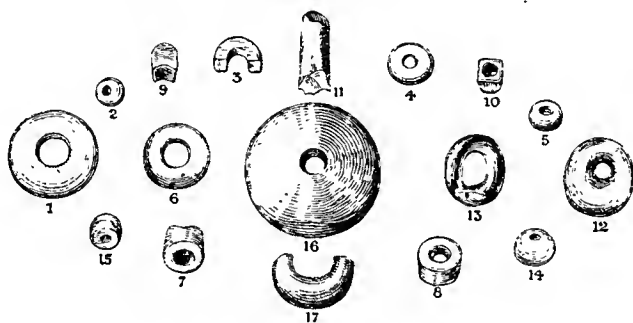


Fig. 26. Beads of Glass and Amber and portion of a Rod of Blue Glass. ($\frac{1}{4}$.)

level and one found in replacing the soil, all came from either the bottom level or the level immediately above it, thus indicating the period as extending from the end of the first to the end of the second century; as confirming this, it may be pointed out that in the excavations for both seasons the bracelets of yellow glass have come from the same levels, with a majority from the earlier. A bead of yellow opaque glass was found in the broch of Dun an Iardhard in Skye by Countess Latour, and is now in the national collection; while another was found in excavating the crannog at Lochspouts, along with Roman melon-shaped beads and a sherd of second-century Samian ware.¹

Two beads of green opaque glass or vitreous paste (fig. 26, Nos. 7 and 8) are cylindrical in shape. One was found on the second level, and the other in the soil when it was being replaced. Two other beads of opaque glass paste (fig. 26, Nos. 9 and 10) are oblong and rectangular in section, forming each a small double cube. They are both of the same lavender-

¹ R. Munro, *Ancient Scottish Lake-Dwellings*, p. 178, fig. 177.

blue colour, and were found one on the lowest level and the other in replacing the soil: they are also, therefore, probably of early type. In connection with these beads mention should be made here of a small piece of a rod of glass (fig. 26, No. 11) of identical colour with them, and of similar composition, as far as can be judged without a chemical analysis, and somewhat flat-sided in section, pointing clearly to the fact that these beads were actually manufactured on the hill. The third level yielded a bead (fig. 26, No. 12) which has been formed from a drop of clear translucent glass allowed to fall on a flat surface, and then perforated, the result being a bead flat on the one side and dulled by the impression of the material on which it has fallen, and doubly convex in section on the other. This bead has a peculiar interest, for just such a bead, of like material and manufacture, was found last year in a cist in Dalmeny Park with a piece of Roman glass and other beads of different forms, some of which were analogous to beads from the brooch of Dun an Iardhard mentioned above.¹ An unusual and rudely fashioned bead is a small ring of parti-coloured glass (fig. 26, No. 13), also from the third level. One small spherical bead of blue translucent glass (fig. 26, No. 14) was also found on the third level, and the three beads which were all that the second level yielded are of the same form and colour. On the site of the kitchen-midden at the south-west end of the summit, and from just under the turf, there was recovered one half of a bead plano-convex in vertical section, and coloured green with red streaks, as if in imitation of a bloodstone (fig. 26, No. 17). Its position points to its being probably of late date. One other bead was found, a discoid bead of amber (fig. 26, No. 16) measuring $\frac{11}{16}$ inch in diameter. It was found in the soil as it was being replaced, and thus lacks any stratigraphical value.

IV. FRAGMENTS OF GLASS VESSELS.

There were found here and there throughout the ground excavated a number of fragments of Roman glass vessels. Not only were there pieces of the large blue-green Roman jars which are so commonly represented in Roman excavations in this country, but there were also portions, as a rule very small, of thin glass vessels, probably beakers, showing by the purity of their material the high standard of excellence which Roman glass manufacture had attained during this period. Such fragments were recovered from all the four levels. But in one respect there was a remarkable contrast. The earliest stratum produced numerous pieces of presumably native-made glass in the form of segments of armlets, while the latest did not produce one piece of such

¹ *Proceedings*, vol. xlix. p. 337, fig. 1.

an ornament; on the other hand, from the latest there came a considerable number of the fragments of Roman glass vessels, but from the earliest the smallest number of pieces that any level yielded. Only one of these fragments (fig. 27) calls for particular remark. It is a quadrangular fragment of crystal-like purity, showing the lip and part of the side of a beaker or cup. Around the rim for a depth of half an inch are a series of parallel bands of engraved lines; while rising from the edge of the lower fracture is a human head in profile, wearing either a hat with a peak to the front and back, or the hair arranged so as to give such a semblance. Besides the head there are traces of other decorative devices, including circles containing dots, and the remains of what appears to have been a wreath. Such wheel-engraved glasses were a product of Roman art in the fourth century. A Continental parallel is to be found in a beaker from Bonn engraved with a figure showing an almost identical treatment of hair or head-dress.¹



Fig. 27. Fragment of Engraved Glass. (J.)

V. HARNESS-MOUNTINGS.

Such harness-mountings as the excavation produced last summer came entirely from the two lowest levels, and consequently display in singular purity the expression of Celtic craftsmanship prevalent from the first to the second century of our era.

Fig. 28, No. 1, from the period of the earliest inhabitation of the site, shows a pierced mounting of bronze of the style known as the trumpet pattern from the arrangement of curves resembling the ends or bells of trumpets which go to compose the figure. The technical finish of this specimen is very beautiful, the effect being intensified by the bevel given to the edges of the trumpet-ends and by the sharpening of the outline. It is slightly imperfect, but the beauty of the design is only a little impaired. On the back is a stud for attaching the object to leather. Numerous examples of these have been found in the forts of the German Limes, and the peculiar style of ornament was represented at Newstead also. To the earliest period likewise belongs the object shown in fig. 28, No. 4. In form it is an oblong plate of bronze measuring $\frac{1\frac{3}{8}}{16}$ inch by $\frac{5}{8}$ inch, furnished with a loop placed longitudinally at the back. An article of similar form was found in 1914, but this one differs

¹ Kisa, *Glas im Altertume*, vol. ii. p. 559, Abb. 248; also *ibid.*, pp. 631-661.

materially from it in that its surface has been beautifully enamelled. The enamel has lost most of its colour, but originally the three lozenges appear to have been of pale blue on a field of crimson.

Another style of Celtic art which, though bold and impressive, lacks the subtlety and refinement of the trumpet-pattern design, is illustrated by the harness-mounting of bronze from the third level which fig. 28, No. 2, illustrates. It is rather star-shaped than cruciform, but does not actually conform to either definition. In the centre is a boss; on either side are two oval projections, each with a central boss; while at top and



Fig. 28. Harness-Mountings of Bronze.

bottom, with crescentic piercings at their bases, are triangular projections. Two loops are attached to the back. We have seen this design of an oval and a boss, or petal as it has been called, previously in the dress-fasteners (fig. 23, Nos. 14 and 15), and it is frequently met with in Celtic art. A harness-mounting very nearly akin to this last may be seen in the hoard of such objects from Middlebie, Annandale, preserved in the National Museum, and illustrated in the *Journal of Roman Studies*.¹ The similarity of the terrets in that hoard with those from Traprain has previously been remarked on. Fig. 28, No. 3, shows another harness-mounting of bronze from the third level, likewise furnished with the double loops at the back, and probably employed for the same purpose

¹ Vol. iii., pl. ii., lower left-hand corner of the plate.

as the last. It is in form an equal-armed cross, with the central panel occupied by two triangular tangential figures brought into prominence by a perforation on either side. These two triangular projections swell upwards to a higher plane than the arms of the cross as they attain to their point of contact, where they slightly overlap. If reference is made to a late Celtic horse-bit of bronze found in the Thames, and now in the British Museum,¹ an earlier step in the development of the central figure of this design will be apparent. Attached to the cheek-ring of the bit on one side is a cruciform mounting of much the same size as that under consideration. The central panel of this mounting is circular and surrounded by a slight convex moulding, which on two opposite sides diverges outward towards the centre of the panel with eccentric curves, which meet not point to point but obliquely, and which swell upwards towards their outer extremities. The explanation of these singular swelling projections is therefore probably to be found in the eccentric sweeps of a moulding around a pierced central panel. The date of this bit is the first century, and the richness of its ornamentation points to its being considerably earlier than the Traprain Law mounting, which from its find-spot is probably a product of the second century.

The other object in fig. 28, viz. No. 5, is a stud of bronze the centre of which is countersunk. It may or may not have been connected with harness.

Though five terrets were found in 1914, not a single specimen was brought to light last summer.

VI. WEAPONS.

By remarkable good fortune the remains of weapons which our latest excavation has produced form as it were the complement in the warrior's "graith" to what we obtained in the previous year. The spears were the distinguishing feature of the weapons of 1914; last summer's digging did not produce a single spear-head. We have instead three portions of swords, two spear-butts or ferrules and a portion of a third, a javelin- or possibly an arrow-head, and the end of the iron rib of a shield.

Of the sword remains, two are points and the other is a tang. The best preserved of the sword-points (fig. 29, No. 1) shows a narrow double-edged blade resembling the native swords found at Newstead. The length of the fragment is 6 inches and its greatest breadth only $1\frac{1}{8}$ inch. The tang (fig. 29, No. 2) has a length of $4\frac{1}{2}$ inches, and the fragment of the blade still remaining shows a breadth of $1\frac{3}{4}$ inch. Presumably these are portions of native swords. The breadth of blade shown by the two

¹ *Proc. Soc. Ant.*, xxxiii., No. 6, p. 159.



Fig. 29. Portions of Swords, Spear-butts, Javelin-head, and piece of a Shield Rib.

sword-points is a trifle less than that of the Newstead native swords, while that of the blade attached to the tang is greater; but in the case of all three the blades have been quite flat without any trace of a midrib, a feature which distinguishes them at once from the undoubted Roman swords from Newstead and ranges them with the Celtic examples found there. Both sword-points came from the third level, indicating a second-century date, while the tang came from the level beneath, and may have belonged to the end of the century previous. The spear-butts (fig. 29, Nos. 3-5) are rarer objects than either swords or spears. No. 4, which came from the fourth level on area G, measures $3\frac{1}{8}$ inches in length and $\frac{9}{16}$ inch in interior diameter at the open end. It consists of two parts—a cylindrical tube of bronze with a double convex moulding round the top and a pointed knob of iron fixed into its lower end. The iron is much corroded, and it is difficult to see how the junction of the two parts has been effected; but an iron pin runs well up inside the bronze tube, and possibly penetrated the spear-shaft. Between the mouldings at the top there is a single perforation for a small pin. The object of iron shown by No. 5 was a puzzle until the butt previously described was recovered; then it became evident that it had been the point of a similar article. It came from the third level on area F.

The other spear-ferrule (No. 3), a much more commonplace object, is a pointed iron socket $3\frac{5}{8}$ inches in length, which came from the top level, and has probably therefore a fourth or fifth century date of origin. Fig. 29, No. 7, is the end of an object apparently analogous to another found at Newstead, and believed to have been a central rib for strengthening the framework of a shield. The object under discussion measures about 3 inches in length by about $\frac{1}{2}$ inch in breadth, and is evidently a fragment. In section it is plano-convex, the flat surface being intended to be towards the shield. The end has been hammered out to a circular form with a diameter of about $\frac{3}{4}$ inch, and at 2 inches from the end the rib has been bent up so as to form a loop, possibly to be used for the purpose of suspending the shield by a cord or thong passed through it when not in use. Attached to the expansion at the end is a rivet with a flat circular head, which must have been employed to fasten the rib to the shield; the space between this rivet-head and the rib is very narrow, making it probable that the shield to which it was attached was either of metal, of hide, or of leather. This object came from the level of earliest inhabitation.

The last article to be described among the weapons is fig. 29, No. 6. It is probably a javelin-head, and measures $3\frac{3}{4}$ inches in length. The blade is thin and the socket split, the latter a characteristic that in these excavations has so far been confined to the spear-heads from the higher

levels of occupation. This example came from the second level, and is therefore probably of fourth-century date.

As connected with the weapons we may include here several pieces of bronze binding, semi-tubular, and such as might be used to protect the edges of sheaths or scabbards. A number of pieces were found in



Fig. 30. Piece of Bronze Binding showing Rivet and Loop. ($\frac{1}{2}$.)

1914, and this year we recovered four pieces, three of them from the first and second levels and the other from the soil during the process of filling in. The last mentioned (fig. 30) is alone worthy of notice, by reason of the artistic loop and rivet which have been used to hold the binding on the edge of the article to which it belonged.

VII. TOOLS AND IMPLEMENTS.

Fig. 31, Nos. 1 to 3, shows a number of iron knives all differing from those found in 1914. No. 1, which measures 5 inches in extreme length, and has a long and sharply defined check at the commencement of the blade, came from the highest level, and is probably therefore a fourth or fifth century type.¹ No. 2, which is imperfect, measures 5 inches in length, and came from the second level. The blade broadens in regular gradation from the tang, and there is no distinctive line between the two parts. No. 3 also came from the second occupation level, and measures $3\frac{1}{2}$ inches in length. It presents a peculiarity in having a slight projection from the cutting edge near the point, suggesting the fleam of a veterinary surgeon. The object No. 5 on fig. 31 resembles somewhat a knife-blade in shape, but from its thickness it is evident that it is not a completed production, though it may have been ultimately intended for a knife. Fig. 31, No. 4, is the point of a knife. Fig. 31, No. 6, is a thin object of iron $2\frac{1}{4}$ inches in length, thickest at the broad end. On the lower edge is a curved hollow which has all the appearance of having been regularly fashioned, and the object may conceivably have been a spokeshave used for scraping

¹ In the illustration this knife is shown upside down, the concave edge towards the top of the page being the cutting edge.

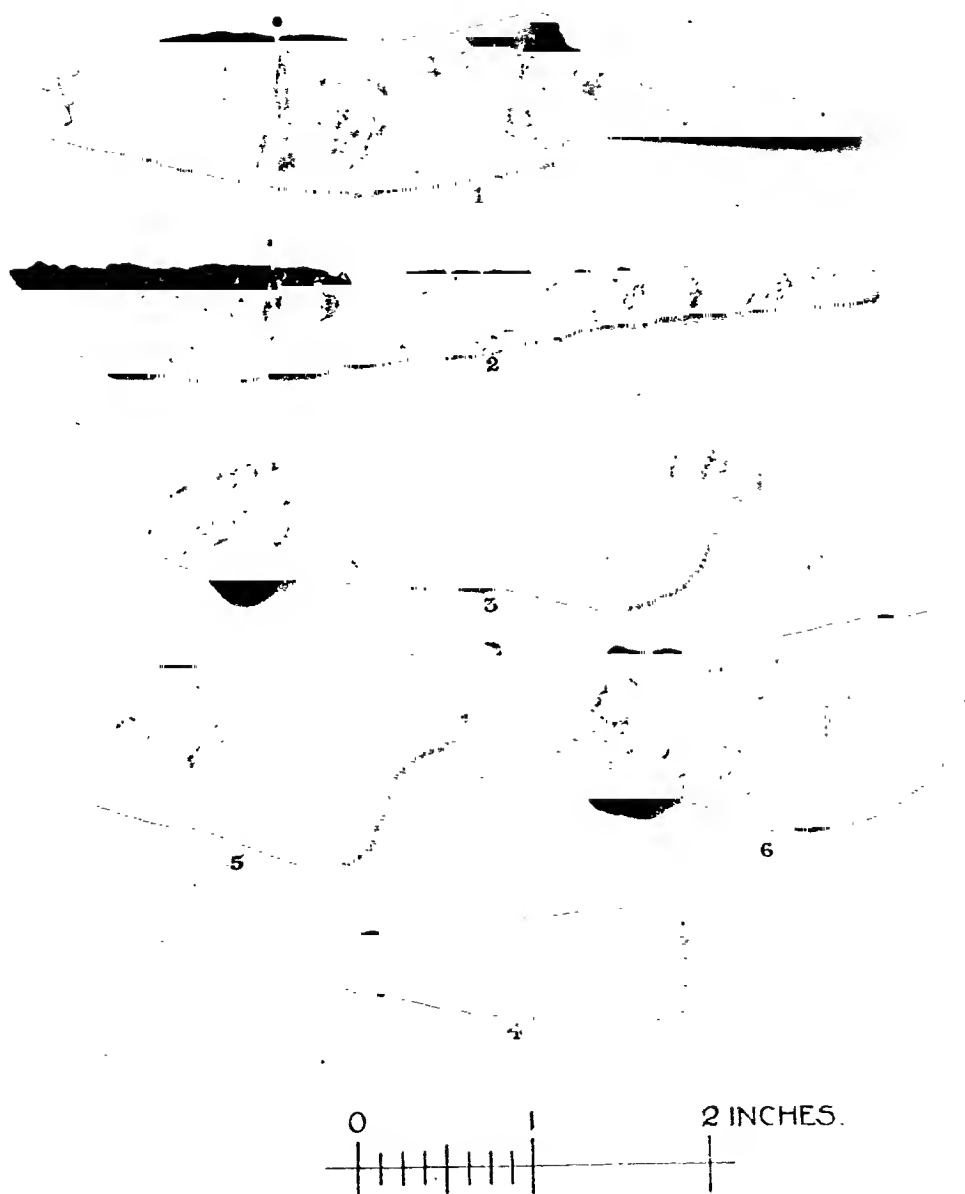


Fig. 31. Iron Knives, etc.

down the shafts of spears or arrows. An alternative explanation is that it has been a short knife or razor, the narrower end having been set in a mounting held in position by means of the recession in the edge. A knife of this form, with a short bronze mounting from the centre of which a fixed ring projects, is illustrated in *Vorgeschichtliche Alterthümer aus Schleswig-Holstein* (Mestorf), pl. li., No. 622. This relic came from the fourth level on area G.

Fig. 32 shows a pair of shears or scissors of the common type of the period, a type which for certain purposes has persisted, with but little difference, to the present day. These shears came from the second level.

A mortising chisel, round in section in the handle and square below,



Fig. 32. Pair of Iron Shears. (†.)

the end of which has been turned to a hook by the action of the hammer, is shown in fig. 33, No. 1. It came from the cutting behind the rampart, and seemingly belongs to the period of the third occupation corresponding to the second level. Two mortising chisels were found at Newstead.¹ Fig. 33, No. 2, is seemingly the spindle of a quern such as was found at Newstead, and presumably Roman, as no such pivot was used in the native querns, of which a number have been found on the hill. It came from the second level, and measures 6 inches in length, is square in section towards the ends but round in the middle. Fig. 33, No. 3, is a small tool $2\frac{3}{8}$ inches in length, resembling an awl but with a straight chisel-shaped point. It came from the third level. Fig. 33, No. 10, is a portion of a sickle with a socket. A similar sickle was found in the Celtic level at Wookey Hole, and measured $3\frac{1}{2}$ inches in length.²

¹ *A Roman Frontier Post*, pl. lix., Nos. 4 and 11.

² *Archæologia*, vol. lxii. pt. ii. p. 576, pl. lxii. fig. 13.



Fig. 33. Mortising Chisel, Quern Spindle, Linch-pin, and miscellaneous objects of iron.

VIII. MISCELLANEOUS OBJECTS OF IRON.

A curious little hook with a slight projection is illustrated in fig. 33, No. 4. The stem of it is ornamented with spiral flutings. Similar ornamentation was observed at Newstead on the rod by which an iron lamp was suspended, and on a second object found in the ditch of the early fort and believed also to be the rod of a lamp.¹ Fig. 33, No. 5, has an analogy among the relics from Newstead,² and is supposed to have been a linch-pin. This specimen measures $6\frac{9}{16}$ inches in length, and came from the second level. Fig. 33, No. 7, is a hook which looks as if it had originally been attached to something, as the bulging stem is quite unsuitable for the purpose of insertion in wood. Fig. 33, No. 8, is a piece of an iron hinge the arm of which has been broken off at a nail hole. It came from the third level.

A small segment of an iron ring with a spherical knob at either end (fig. 33, No. 9) might conceivably have been used as a button, but whether or not this is its real purpose is uncertain.

Fig. 33, No. 6, illustrates a pin-like object with a discoid head $\frac{3}{4}$ inch in diameter and a knob on the stem. It came from the earliest level. The pin does not terminate at the lower edge of the head, but is carried up the back of it for a short distance, as if the two parts had been made separately and welded together. This object seems rather heavily made for a pin for personal use, but pins with flat circular heads are met with in bronze. One was found in the brooch of Burray, Orkney, and is in the National Museum;³ another was found at Newstead.⁴ On fig. 34 are shown a number of large nails (Nos. 12-19) from various levels, a washer (No. 7), two hooks (Nos. 10 and 11), and a couple of punches (Nos. 4 and 5).

Connected with horse traffic may be noted one half of a horse-shoe pierced for four nails, and with no calkin (fig. 34, No. 2), measuring $1\frac{1}{16}$ inch in breadth, from the second level; a linch-pin (fig. 34, No. 1), less dubious of purpose than the previously noted example; and a strip of metal (fig. 34, No. 3) measuring $6\frac{1}{2}$ inches in length by $1\frac{3}{8}$ inch in breadth (slightly more curved in section, especially on the outer surface, than shown in the illustration), which, following the guidance of the Newstead examples, we may identify as a portion of the tyre of a wheel. It came from the third level, and is therefore probably of second-century date. These last two objects complete the evidence of native wheeled vehicles which was more than suggested by the harness mountings found last year. Another and smaller portion of a tyre was

¹ *A Roman Frontier Post*, pl. lxxix. figs. 5 and 7.

² *Ibid.*, p. 294, pl. lxx. fig. 2.

³ *Proceedings*, vol. ii. p. 153.

⁴ *A Roman Frontier Post*, pl. xcii. fig. 15.



Fig. 34. Linch Pin, portion of a Horse-shoe, piece of a Wheel-tyre, Nails, etc.

found also. The two objects on fig. 34, Nos. 8 and 9, are strips of metal, broadest in the centre and tapered to either end; in length they measure each about $2\frac{1}{2}$ inches; their purpose is not obvious. The only other objects of iron to be dealt with are the pierced end of a plate of iron (fig. 34, No. 6) and two rings (fig. 40, Nos. 1 and 3), the larger measuring $2\frac{1}{8}$ inches in diameter over all, and the smaller, which may have been the loop of a buckle, $1\frac{3}{16}$ inch by $1\frac{1}{16}$ inch.

IX. SHARPENING STONES.

Fig. 35 shows a number of sharpening stones. Some of them show more fashioning than others. No. 9 is a fragment of quartzite bevelled at one edge. No. 10 is more peculiar than any of the others, for at both ends it has been rubbed down to a bevel with a convex section as if it had been used for polishing. It measures $3\frac{1}{2}$ inches in length, and came from the third level. Fig. 39, No. 1, shows a large ovoid stone of close-grained sandstone, imperfect, $9\frac{1}{2}$ inches in length, the opposite sides of which have been worn concave with the sharpening of blades, to such an extent that in places they show a bright polish. Such a stone was conceivably used for sharpening swords, as there are no facets on the surface such as would be produced by the sharpening of short blades. It came from the second level on the terrace.

X. MOULDS AND CRUCIBLES.

There is abundant evidence to show that the inhabitants of "Dunpelder" were skilful craftsmen in metal. Last season's finds were particularly illuminating in this respect.

It will be remembered that the Report for 1914 recorded the discovery of several fragments of clay moulds, and also of a portion, amounting to about one-half, of a small crucible. Last season, however, not only did we find two complete crucibles (fig. 36, Nos. 1 and 2), but we also recovered two complete moulds and a number of fragments of others. Both crucibles are triangular in section at the mouth, diminishing downwards to a small rounded base. They have no tang or handle for holding them by, nor have they any marked spout from which to pour the metal, the rounded angles being suitable for this purpose. The larger crucible, which shows traces of bronze at the bottom, has a height of $1\frac{9}{16}$ inch and a maximum diameter of $1\frac{1}{8}$ inch; the smaller measures $1\frac{1}{16}$ inch in height and $1\frac{3}{8}$ inch in greatest diameter. Both came from the third level. There can be little doubt that the object illustrated in fig. 35 of last season's Report, and there called a pair of pincers, was in reality a pair of tongs for lifting just such crucibles as these, the shorter arm being placed inside.

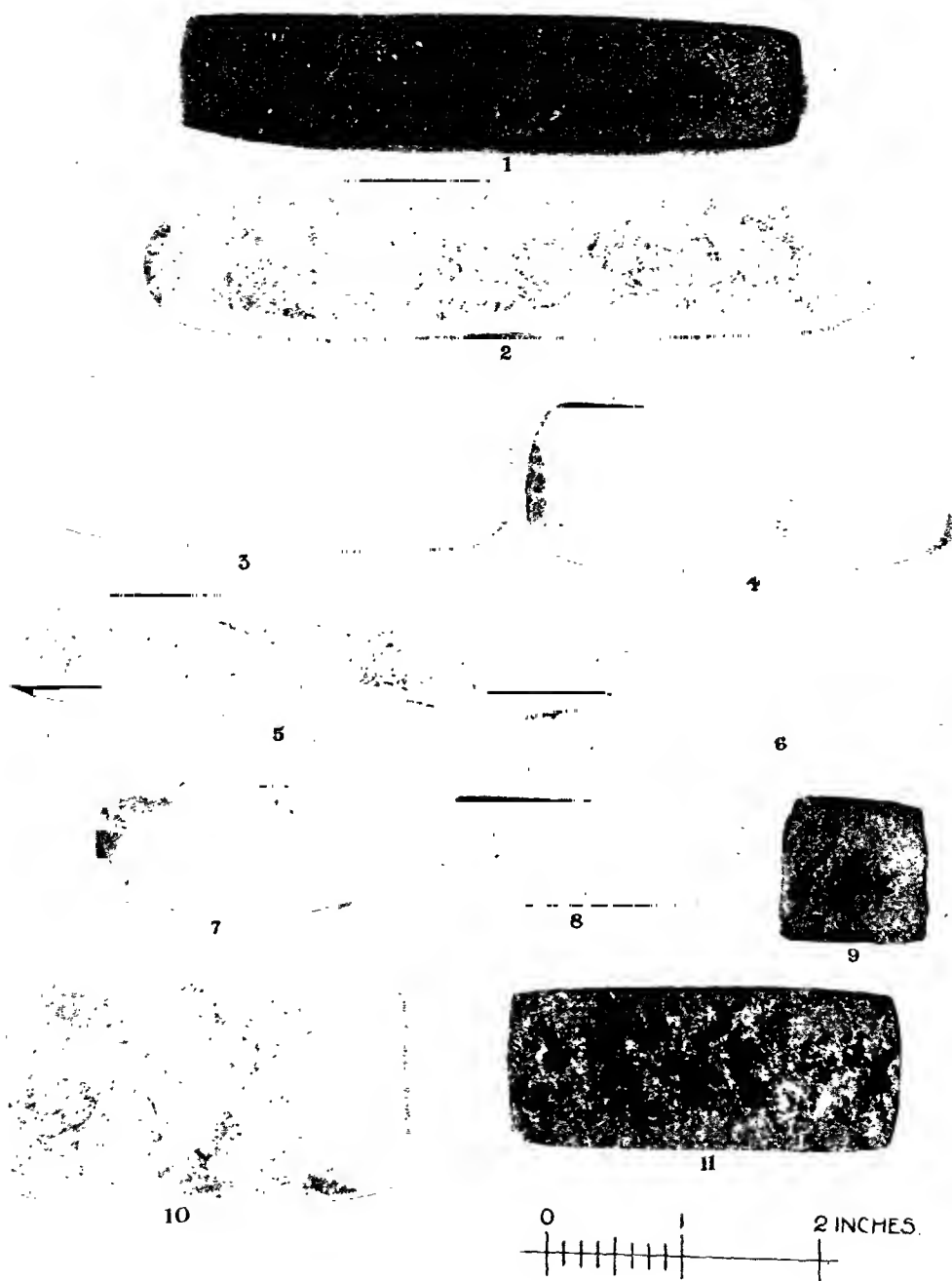


Fig. 35. Sharpening Stones.

Fig. 37 shows the more interesting of the moulds which were found. No. 1 is absolutely complete and ready for the reception of the molten metal to be poured in at the gate, which is seen at the lower end of the illustration. The exact length of this mould is $1\frac{5}{8}$ inch. No. 2 was found in a similarly complete condition, except for a slight fracture at the lower end caused by the pick while loosening the soil. On account of this imperfection it was decided to have the two sides laid open in order to ascertain not only how the mould had been formed, but how the casting had been proceeded with, and what was the object intended to be cast. Accordingly, a fret-saw was applied to one side (the inner sides of the separated halves shown in the illustration), and after a little



Fig. 36. Crucibles.

sawing the two parts came asunder. A diagram (No. 2A) shows the class of object for the casting of which this mould was made. It is a clasp or dress-fastener of a well-known type, examples of which have been found here, and also at Newstead. The material employed for the mould has been fine clay, containing seemingly a good deal of sand in its composition, and the method of construction seems to have been somewhat as follows:—A lump of this material was first taken by the workman and roughly shaped to the semi-ovoid form of the half lower of the mould. Into the plastic mass the pattern, probably a similar bronze dress-fastener, or a replica made in some other material, was pressed until it was embedded to about the extent of one-half its depth. A tool was then taken, probably a knife, and the superfluous clay projecting above the required plane of the upper surface was pared off, a slight bevel being at the same time given to the edge

at the rounded end, as can be seen in the illustration. A conical piece of wood pressed to the extent of one-half of its thickness into the lower end of the mould formed the gate, or orifice, for the metal to be poured through, and with some round-pointed object five small depressions were fashioned at intervals on the sides and at the ends for the keys to hold the two sides of the mould in place. No separate

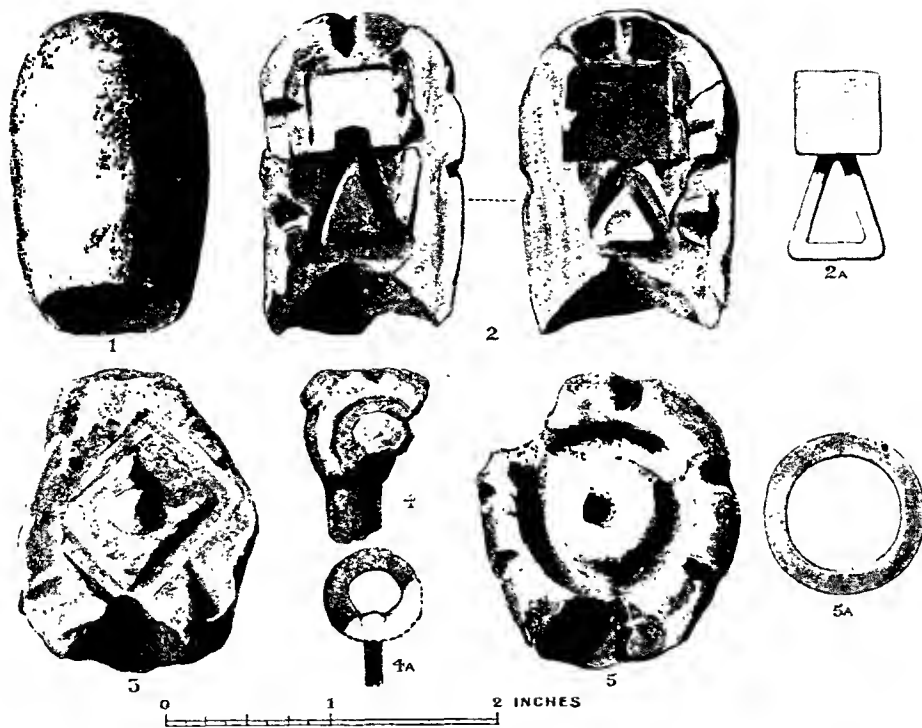


Fig. 37. Clay Moulds and Diagrams of Castings from them.

vent was made, the gate being sufficiently large for the air to escape by when the metal was poured in. Thereafter this half of the mould would be slightly baked at the fire to harden it. The pattern would then be returned to the matrix and the whole dusted over, or smeared with some oily material to prevent adhesion. There is no discoloration on the interior surfaces of the opened mould to give any indication of the material used for this purpose. The next step was the application of a fresh lump of clay pressed over the top of the previously fashioned

matrix still containing the pattern and the wooden plug for the gate. The clay was pressed down over the bevelled edge, perhaps with a view to prevent contraction in baking, and forced into the slots left for the keys. The mould thus far completed, with the pattern probably left in, would then be allowed to dry slowly in the air; that process accomplished, it would be slowly baked to the requisite degree of hardness possibly bound with wire in order to keep the two parts together, as the nick in the side of fig. 37, No. 2, suggests. After the hardening process, the removal of the binding material and of the pattern brings us to the final step of construction, which consisted in the coating of the whole mould with a thin slip of clay so as absolutely to close the interstices. To harden the slip, the object was once again dried slowly and the process was complete. When used, the mould would be again heated almost to the temperature of the molten bronze to prevent the metal cooling in its passage into the matrix, and eventually it was broken up to release the casting; this last step explains why, with the above rare exceptions, only broken pieces of clay moulds are found in excavations.

Fig. 37, No. 3, is the one half of a mould for casting a square loop, possibly for a buckle. The matrix was placed diagonally in the clay in order that the metal when poured in at the gate might run freely down the inclined planes thus presented to it.

Fig. 37, No. 4, is a part of the lower portion of a mould for casting a pin with an annular head, and a stem on a lower but parallel plane. The peculiarity of the pin-head is the broadening of the surface of the ring on the lower side, giving it the form, if not also the peculiar ornamentation (which would only be shown on the upper half of the mould), of the so-called ibex-horned pins, one of which was recovered from the Broch of Bowermadden in Caithness, and is now in the National Museum.¹ The increase in breadth would probably be greater than that shown in the diagram 4A; but as the fragment of the mould only indicates the commencement of the expansion, it was not deemed advisable to show the type too definitely. No. 5, which was found in two pieces, is also the lower half of a mould, used for the purpose of casting plain bronze rings. A segment, amounting to about one-half, of a small bronze ring of identical size, cast in such a mould, was likewise recovered. It will be noticed that, in addition to the five notches for keys on the circumference, there is a depression for a similar purpose in the centre. All these moulds were discovered from the third level, and thus may have attributed to them a second-century origin.

¹ *Proceedings*, vol. ix. p. 247.

As further evidence of the practice of bronze-casting, various small pieces of that metal were picked up which had evidently been dropped from the crucibles, or² were "headers" from the moulds.

All the illustrated fragments were found near the same place, but, as indicating that the craft was generally practised, it may be pointed out that pieces of moulds were found in the kitchen midden at the end of the summit, and also last year, as previously mentioned, in various places. In addition to the foregoing, there were also obtained one half of an ovoid pebble which had had a mould for a bar or ingot cut on one surface, and on the opposite surface a mould for some indefinite round-ended object (fig. 39, No. 3); a block of sandstone, imperfect, showing portions of two matrices for bars or ingots; also a heavy block of sandstone some 8 inches long, 4 inches broad, and 5 inches deep, the upper surface of which is polished and slightly concave as if it had at one time served the purpose of a sharpening stone. On its upper surface is cut a mould for a bar or ingot with a semi-elliptical section, $4\frac{3}{8}$ inches in length and $\frac{3}{4}$ inch in breadth. The bottom of the matrix is slightly reddened as if by iron oxide, and sundry pittings on the polished surface of the stone seem to contain particles of iron.

Before leaving the subject of metallurgy, it should be stated that we found iron ore and iron slag, galena, and sulphide of lead. The use of tin was evidenced last year by its application to a "hand" pin, a form for which we found pieces of moulds, proving local manufacture. We have found so far no copper; but that metal is obtainable in small quantities in the neighbouring Lammermuirs, and there is no reason, therefore, why the inhabitants should not have made their own bronze. The silver rings and the rather unusual inlaying of silver on the fibulæ, presuming these objects to have been of home manufacture, are evidence too that silver was wrought. There is so far no trace of gold.

XI. SPINNING WHORLS.

The number of whorls recovered was thirteen, including three halves of separate specimens. Two of these broken whorls were made from pieces of Samian ware, and came respectively from the first and second levels; the third, of red earthenware, also probably (fig. 38, No. 6) Roman, belonged to the third level. The last mentioned shows on one surface a number of cuts, made presumably with a knife. Two whorls are of lead; one of them came from the third level on the terrace, and the other from the second level on area F; both are much decayed. The remaining eight are of shale, sandstone, or other stone.

Two came from the second level, three from the third, two from the lowest level, and one was found in filling in the excavation. Only two show any attempt at ornamentation: one, of sandstone, irregularly circular, with a tendency to a trilobate form (fig. 38, No. 3), has on one surface three small pittings placed symmetrically; and the other, of shale (fig. 38, No. 2), is marked on one face with a number of lightly incised radiating lines. All the stone whorls are of the ordinary discoid class; some have the holes bored symmetrically through them (fig. 38, No. 1), while in others (fig. 38, No. 4) this operation has been done from both sides, leaving the usual constriction in the middle of the perforation.

XII. PLAYING MEN OR COUNTERS OF STONE, ETC.

Somewhat remarkable was the number of small, fashioned discs of stone (fig. 38, Nos. 9, 13, and 14) and of pottery which came to light during the excavation. To these must be added a number of small water-worn pebbles, of corresponding size and sometimes of attractive appearance (fig. 38, No. 10), which had no place geologically in the soil of the hill-top, as well as a disc fashioned from a fragment of thin Roman glass, a small polygonal block of thick blue-green Roman glass (fig. 38, No. 11) the sharp edges of which have been ground down, and a button-shaped object, plano-convex, of blue translucent glass (fig. 38, No. 12), similar to many found in the Roman fort at Newstead, and presumably also Roman. Thirteen of these objects are of stone; three are fashioned from fragments of Samian pottery (fig. 38, Nos. 7 and 8). The usual diameter is $\frac{7}{8}$ inch or thereabouts. The discovery at Corbridge a few years ago of a stone on which was cut a checker-board suggests that these objects were pieces in some game played with men or counters after the manner of draughts. If so, the game was a popular pastime on "Dumpelder."¹ It may have been observed that the bulk of the relics have come from the two lowest levels, but in the case of these playing men the ratio is reversed—for of the twenty-one found, two came from the level of the latest occupation, ten from the level below it, six from the third level, and two from the lowest stratum, the one unaccounted for having been recovered from the upcast when the soil was being replaced.

XIII. MISCELLANEOUS OBJECTS.

From various levels, but chiefly from the lower two, came thirteen stone balls, varying in diameter from $\frac{1}{16}$ to $1\frac{5}{16}$ inch, a number of which

¹ Similar small discs of stone are occasionally found on the sites of early habitations in the South of Scotland, and were probably used for the same purpose.

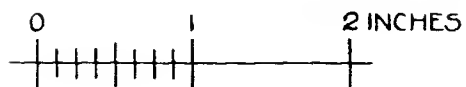
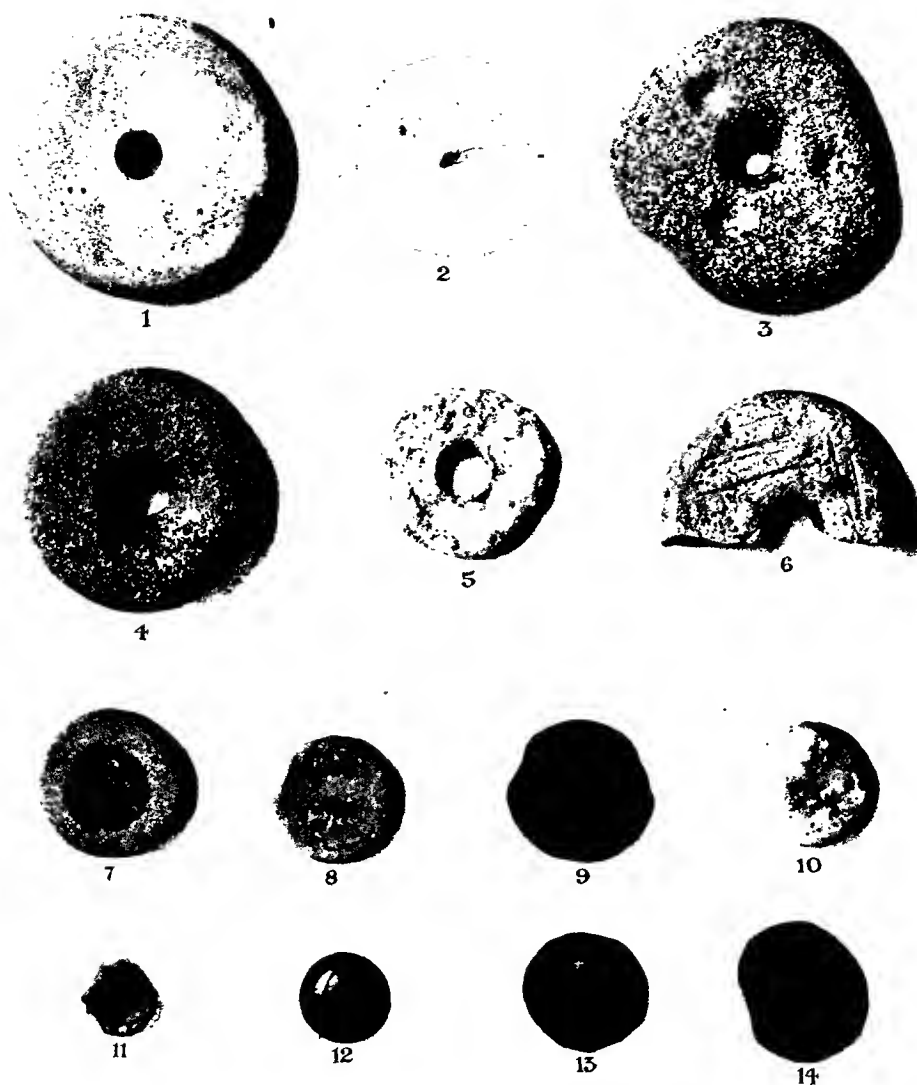


Fig. 38. Spinning Whorls and Playing Men.

are illustrated in fig. 39, No. 4. Not all of these have been fashioned, but those presumably in a natural condition are not native to the soil, and it is probable, therefore, that they were brought to the hill to be used for the same purpose as the others. The natural inference to be drawn from their size and appearance is that they were sling stones. Another spherical object is a ball of baked clay (fig. 40, No. 7), from the lowest level, $\frac{1}{16}$ inch in diameter, over the surface of which when it was soft someone has made with the point of a pin a series of small punctulations in a wandering line, without, however, forming thereby any recognisable device or ornament. A somewhat similar pellet, but unmarked, was found in 1914.



Fig. 39. Sharpening Stone, Lamp, Stone Mould, and Stone Balls.

This year's excavation produced another lamp of stone (fig. 39, No. 2). It is triangular in outline, measures $8\frac{1}{2}$ inches in bisecting axis, and is furnished underneath at its apical extremity with a projection to serve as a handle. It came from the highest level. It shows, as did that recovered in the previous excavation, a small round hole in the bottom of the bowl.

Not the least interesting of the relics found was a folding spoon of bronze (fig. 41), $4\frac{1}{4}$ inches in length. The fore part of the handle is made to resemble an outstretched lion between whose paws the blade of the spoon has been hinged; the opposite end, flattened out to a fan shape, is split on one side, and has been pierced for a pin, on which has been hinged another object, possibly a lancet. For such a blade to rest in there is a slight groove along the side and a catch at the opposite end of the handle. On its under side the handle has been left hollow to hold some other instrument, conceivably a probe, the remains of



Fig. 40. Rings of Bronze and Iron, Objects of Jet, and a Ball of Baked Clay.

the hinge for which are visible beneath the fan-shaped terminal. The spoon is of the usual shouldered, round-ended form. It came from the second level, and is therefore presumably of third or more probably of fourth century date. This object, which is undoubtedly of Roman origin, has been cast. Roach Smith¹ illustrates a similar folding spoon the handle of which is broken off at the back of the lion's neck; and the incomplete handle only of another was found at Wroxeter in 1913.² So close is the resemblance of both of these to our example, that the likelihood of their common origin is considerable. Possibly they are even from the same mould.

Other articles of bronze include a small object measuring in greatest

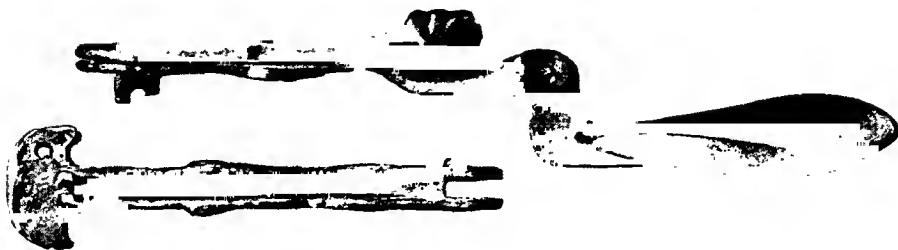


Fig. 41. Folding Spoon of Bronze. (1.)

diameter $1\frac{5}{16}$ inch, which appears to have been oval and saucer-shaped, and to have had its sides bent inwards.

There are also, a ring (fig. 40, No. 2), $1\frac{3}{4}$ inch in diameter over all, from the lowest level; segments of two long oval links of bronze of slightly different section (fig. 40, Nos. 4 and 5)—the most complete, measuring $3\frac{1}{4}$ inches in greatest diameter, from the second level, the smaller fragment from the lowest stratum; an oval object measuring $\frac{3}{4}$ inch by $1\frac{1}{8}$ inch, countersunk and with an oblong perforation in the centre, resembling a mounting which has held two oval plaques, one on each side, is illustrated in fig. 23, No. 18, and has been referred to on p. 103.

Of miscellaneous relics of jet or cannel coal there are the following:—part of a spherical object considerably flattened on the remaining pole and highly polished, possibly the major portion of a large pin-head, measuring $1\frac{5}{16}$ inch in diameter, found on the third level (fig. 40, No. 6); a small squarish piece of jet measuring $1\frac{3}{8}$ inch by $1\frac{1}{16}$ inch, showing at

¹ *Illustrations of Roman London*, pl. xxxvii, fig. 13, p. 138.

² *Report of the Research Committee of the Society of Antiquaries of London: Second Report on the Excavations at Wroxeter*, p. 14, fig. 5, No. 19.

both ends the markings of a knife with which it has been cut, from the second level on the terrace (fig. 40, No. 8); a segmental piece of cannel coal, possibly broken when in course of manufacture into a bracelet, amounting to about one-third of a circle, tooled with a gouge and pierced,



Fig. 42. Pieces of Jet showing tool-marks, and Hammer-stones.

$3\frac{3}{4}$ inches in greatest diameter and $1\frac{1}{4}$ inch in thickness, from the second level (fig. 42, No. 1); a cubical block of the same material, 2 inches in thickness, showing markings produced by the action of a saw, from the third level (fig. 42, No. 2).

A number of stone implements were found:—an ovoid pebble of quartzite abraded at both ends from having been used as a pounder,

4½ inches in length, from the lowest level (fig. 42, No. 3); a lenticular pebble of ironstone, 3¼ inches in diameter, chipped on the edge from use as a hammer-stone, from the third level (fig. 42, No. 4); an oblong pebble abraded at both ends, 4⅝ inches in length, third level; an oblong-pointed pebble, 6⅝ inches in length, notched on opposite sides, possibly a loom weight, third level; a pointed oblong pebble, 5⅝ inches in length, grooved by friction on its edges in a way that suggests its use as a netting mesh, top level; a spherical object of sandstone, 3⅝ inches in diameter, with a circular cavity on the top, highly polished, which has the appearance of a socket stone, though somewhat small for the purpose.

Only one worked object of bone was found, and that a splinter of a large bone 3⅝ inches in length, worn at one end as if it had been used as a spud.

PRE-IRON AGE RELICS.

Almost all the foregoing relics may with reasonable certainty be set down as belonging to the later Iron Age, the Late Celtic period in its decline, and almost to the commencement of the succeeding dark ages into which it melted away; but there were recovered both in the past summer and in 1914 a number of objects that prove the occupation of "Dumpeider" at a time anterior to the coming of the Roman legions, with which epoch-making event the earliest of the main occupation strata so far excavated seems to be approximately contemporaneous.

Fig. 43, No. 1, shows the lower half of a polished stone axe, 4½ inches in length by 2½ inches in breadth at the cutting edge, which came from the lowest level and may be regarded as Neolithic.

The object shown in the same figure, No. 2, is a chisel-shaped object of stone, much weathered, 4⅞ inches in length, 1⅝ inch in breadth at the cutting edge, tapering to ⅝ inch at the butt. It does not conform to any recognised type, but there is little doubt that it is an artifact, from the symmetry of its form and the polished planes on either side which alone retain the original surface. This relic came from the third level.

It is noteworthy that the three arrow-heads of flint which we have so far found (fig. 44, Nos. 2-4) are all practically of the same lozenge-shaped form, of the same length (though two are slightly imperfect), and of the identical quality of white flint. One of them came from the third level, but must clearly belong to the bottom of the relic-bearing deposit. Three scrapers of flint were recovered, and an oblong worked flake.

An object which appears to belong to the Bronze Age is a small triangular polisher of sandstone (fig. 44, No. 1) measuring $1\frac{1}{8}$ inch in bisectonal diameter and $\frac{3}{8}$ inch in thickness. Its import was at first a considerable puzzle, but eventually an explanation was forthcoming through comparison with a similar object in the British Museum. The



Fig. 43. Stone Axe and chisel-like Implement of Stone.

latter specimen only differed in that it was slightly larger. It was found at Lusmagh, King's County, Ireland, along with a hoard of typical Bronze Age tools comprising two tanged chisels, a socketed chisel, a gouge, two socketed hammers, a spear-ferrule, and an anvil for fixing in a wooden block; and its assumed purpose was for finishing castings. Another triangular stone which probably served the same purpose was found with a bronze-founder's hoard comprising between 600 and 700 fragments of bronze, including remains of swords, axes, gouges, razors,

etc., at "La Grande Borne," Azay-le-Rideau, Touraine, France.¹ The last mentioned is perforated, and has its edges bevelled and not square as in our specimen. The suitability of the triangular form for the

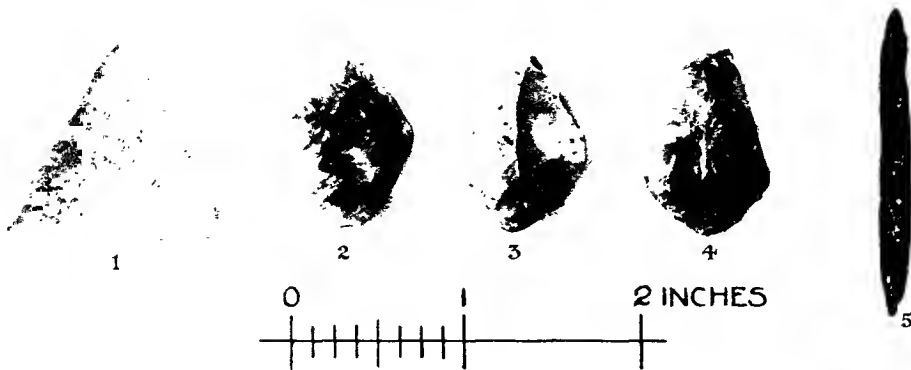


Fig. 44. Triangular Polisher, Flint Arrow-heads, and Punch or Pricker of Bronze.

purpose suggested is obvious, as the polishing of irregular surfaces and angles could be most easily effected by making use of the points.

Another Bronze Age implement is shown in fig. 44, No. 5. This is a small bronze punch, or pricker, measuring $1\frac{3}{4}$ inch in length, rounded and worked to a point at one end, square in section at the centre, and with a straight edge at the other extremity—the latter, however,

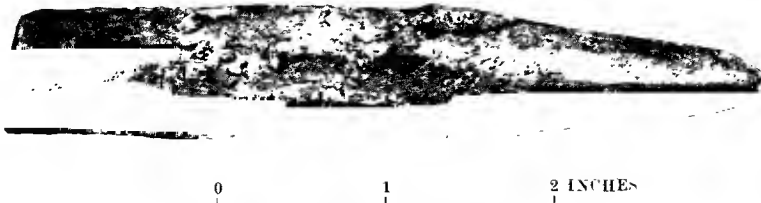


Fig. 45. Point of a Dagger-blade of Bronze.

being probably intended for insertion into a handle. Numbers of small implements of this type have been found in England accompanying interments in barrows,² usually along with objects of flint, and in one

¹ *Bulletin de la Société d'Anthropologie de Paris*, sixième série, tome cinquième, fascicule i., p. 71 fig. 3.

² Evans, *Ancient Bronze Implements, etc.*, p. 188.

or two instances with urns of the beaker type, but there does not appear to be any recorded instance of the finding of one in Scotland. Déchelette, commenting on their use, avers that they were without doubt used for tattooing.¹

The point end of a Bronze Age dagger blade, found in 1914 and described in last year's volume of the *Proceedings*, is here illustrated for the first time (fig. 45).

COINS.

The coins found numbered eighteen, and they occurred on all levels, a combination of circumstances which justifies the inference that a metallic currency was in general use during the four periods of inhabitation. The coins, all being Roman, supplement the evidence suggested by the pottery as to the permeation of Roman methods and manners among the native tribes of at least this part of Caledonia. Out of the eighteen, ten only are determinable, and these divide themselves into two distinct groups—those likely to have been in currency during the latter part of the first century and throughout the greater part of the second, and those which date from the fourth and the earliest year of the fifth centuries.

The following form the first class:—

From the Lowest Level.

1. A legionary denarius of Mark Antony.
2. A denarius of Vespasian, 71 A.D.
3. A denarius of Vespasian, 77 or 78 A.D.

From the Third Level.

4. A "second brass" of Domitian, 86 A.D.

In the second class we have:—

From the Second Level.

5. A "third brass" of Constantine Junior, 317-340 A.D.
6. A "second brass" of Magnentius, 350-353 A.D.

From the Top Level.

7. A small brass coin of Constantine Junior.
8. A small brass coin, probably of Valentinian, 364-375 A.D.
9. A small brass coin, perhaps of Arcadius, circa 400 A.D.

¹ Déchelette, *Manuel d'archéologie préhistorique et celtique*, vol. ii. p. 342.

The tenth determinable coin was found in the soil when the excavation was being filled in. It is a small brass coin of Constantine the Great, 306-337 A.D.

But though the remaining coins cannot be deciphered, their character is sufficiently recognisable to give them a certain chronological value. Thus from the third level came two denarii which might well be of second-century date; while from the second level there were recovered three small brass pieces such as were in use in the third or fourth century, and the one unidentified coin from the highest level was of the same character. The eighth coin was of the same class. Being first observed in filling in, it has no definite find-spot, but it was conjecturally assigned to the second level. It will thus be seen that no coin of a later date than the reign of Domitian has been found last season in the two lower levels, while no coin assignable to an earlier date than the commencement of the fourth century has come from the two higher levels. It is, of course, conceivable that a third-century coin might be among the four late unidentified coins, but the fact that there is not one among the six late coins which have been identified militates against such a supposition. In estimating the significance of these coin-finds we must not lose sight of the discoveries in our excavation of 1914, for in that year there came from the lowest level a coin of Hadrian, 117-138 A.D., and from just beneath the second level, which corresponds to the third of this Report, a denarius of Antoninus Pius, 138-161 A.D.

CONCLUSIONS.

We have now conducted excavations on this site for two seasons, and during the second season, while we have observed the same phenomena repeated, we have also accumulated fresh data for their elucidation; thus we feel justified in tentatively suggesting certain deductions.

The area enclosed within the main line of fortification amounts to about 32 acres, and of this we have so far examined with the spade rather less than half an acre, which, it must be admitted, is a very small proportion on which to base any conclusions. Our excavations have not, however, been confined to any spot, and from the opening up of sites widely apart we have ascertained that over at least a considerable portion of the hill there were four distinct periods of inhabitation during the Iron Age. We have further recovered a few objects of the Bronze Age, and also of the Neolithic period of culture; but inasmuch as we have not found a trace of pottery definitely referable to these periods, nor of any stratum which would indicate that any part of the sites we have explored had been occupied before the earliest Iron Age, we may conclude that such pre-Iron Age objects as we have found must have been casual

relics in the surface soil when the Iron Age people first took possession of the site. The lowest of our definite strata appears to represent the period of longest occupation; for not only do we find the greatest number of relics in it, but the soil of which it consists is discoloured to a much greater extent than that of the other levels.

The finding of first-century Roman pottery in this lowest level justifies the inference that it was being deposited towards the end of that century, but there is no evidence to limit it to that period; on the contrary, odd fragments of pottery, as well as a coin of Hadrian, found in 1914, carry its occupation on well into the second century of our era. The main level that lies above it, disregarding isolated sites noted in 1914 which suggest partial inhabitation during the intervening period, has produced pottery of distinctively second-century or Antonine character, and the attribution to that epoch is likewise borne out by the evidence of a coin of Antoninus Pius found just beneath it in our previous exploration. The third period of inhabitation, or the second level counting from the top, is in all probability of fourth-century date; for although we have found on it pottery such as the remains of the black Rhenish vases decorated with white engobe, which were also in vogue in the third century, not one of the coins which it yielded belongs to the latter century, nor has a recognisable coin of that date been found in the excavations so far, though it is right to state that one unidentified coin from the highest level may possibly be of that period. As for the highest level of all, were it not for the structural remains (which were better preserved there than elsewhere) its existence might have passed unnoticed. A coin believed to be of Arcadius and therefore struck just before 400 A.D., if properly identified, gives it a presumptive date early in the fifth century; but the almost total absence of pottery and relics, and the lack of discoloration of its surface soil, clearly indicate that the occupation at the end of our period must have been brief indeed. The Roman garrisons were withdrawn from the Wall of Hadrian towards the close of the fourth century; and not long after, and possibly as a result of the circumstances that led to that event, the latest level, as regards the area we have so far examined, came to be abandoned. Whether the abandonment was peaceful or otherwise there is so far nothing to show: there are certainly no signs of a conflagration such as one might recognise in burnt clay from the walls of houses to tell a tragic tale of fire and sword.

The discovery of so many fragments of Roman pottery at first suggested the idea of a Roman occupation of the site, for no such phenomenon had hitherto been observed in Scotland except on the site of a Roman fort. As the excavation has proceeded, however, it has become

more and more apparent that we have here no settlement of Roman soldiery to deal with. In the details of structure revealed by our plans there is no indication of that systematic arrangement and regulation which always characterises Roman military posts; and when we turn to the relics, irrespective of the pottery, though here and there an object of Roman type may obtrude itself, the great majority of the finds can only be assigned to a native Celtic origin. In the case of the beads alone, it is remarkable that not a single specimen of a melon-shaped bead such as is commonly found in Roman forts, and of which Newstead produced so many, has so far been discovered; the glass armlets are distinctively Celtic: the objects of jet or cannel coal so numerous on Traprain Law were conspicuous by their absence from Newstead; the fibulae bear all the characteristics of the native art in their forms and in their enrichment; while many of the weapons and the tools bear in their lineaments the proof of their La Tène descent. The querns, of which a number of complete stones and broken pieces have been dug up, are all of the native type, and no fragment of the basalt from the quarries of Niedermendig on the Rhine, so largely employed by the Roman soldiery for their quern-stones, has yet been seen upon the hill. Lastly, no dressed or squared stone such as one would expect to find from the ruins of buildings occupied by a Roman garrison has been unearthed to complicate the solution of the problem.

Whence, then, the Roman pottery? The Celtic craftsman of this period was very skilful in the handling of metals, though in this respect his art had passed its zenith and was already showing signs of degeneracy; but in the treatment of clay he had not inherited or acquired the deftness which belonged to the Late Celtic potters of the Continent or of Southern England. The first few centuries of our era in the south of Scotland, if not in other parts of Britain, seem to synchronise with the low-water mark of the native potter's art. The ware produced was coarse and inelegant, made by hand without the assistance of the potter's wheel; and if occasionally an everted lip or bevelled edge was attempted, the result was lacking in delicacy and in sharpness of contour. To an artistic race—an attribute to which their designs in metal work clearly entitle them—the beauty of the Roman vessels, the rich colour of the Samian ware, and the elegant forms of the pots and vases must have appealed strongly, and we may presume that such attractive commodities found a ready market in their settlements. These objects and the necessities of life which the native could offer in exchange probably produced early in the history of the Roman occupation an incentive to trade, which, as the chronology of our pottery shows us, continued until long subsequent to the date when it is commonly believed that the last Roman soldier

on his southward march had left the Cheviot Hills behind him. Traprain Law has yielded remains of third and fourth century vessels which find no analogies in Newstead, in Birrens, or in any of the Roman forts which this Society has excavated. The presence of the coarse, inartistic native wares, though in diminishing quantities, to the close of the epoch covered by our occupations, shows that, whatever practical knowledge the Caledonians may have absorbed from the invader, the use of the potter's wheel was not included. And in any consideration as to the manufacture of Roman "native" wares in the North this fact must be borne in mind, for had the Romans made pottery here to any extent, one cannot but imagine that the application of such an invaluable appliance would somehow have been communicated. One other Roman commodity is represented to a considerable extent among our finds—that is, glass. Though the natives made objects of glass, certainly beads and possibly also bracelets, there is no evidence that they fashioned vessels of that material. Yet, as in the case of the pottery, from the earliest Iron Age stratum to the latest, there come pieces of Roman bottles, and vases or bowls; and it is noteworthy that, notwithstanding the apparent brevity of the later occupations of the site, if such an inference is justifiable from the paucity of relics, more pieces of this glass are catalogued from the two highest levels than from the two lowest. From the former, which belong to a post-Roman period, comes one notable fragment of an engraved bowl which surely reveals a cultured taste in a people sometimes ignorantly regarded as little elevated in refinement above the modern savage.

Were further proof required of a trade which the Roman arms had carried into Caledonia, and which survived their departure from the North, it is to be found in the number of coins, eighteen in all, which the excavation of such a small area has yielded, and which clearly bespeaks their use as currency. How such trade was conducted we have no positive evidence to show; but it is more probable that fragile and delicate objects of pottery or glass made in Gaul, or in the Rhenish Provinces, were transported direct by sea, perhaps to an adjacent port, possibly Dunbar, or more distant Inveresk, than that they eventually reached their destination by a lengthy carriage over land subject to the many risks of destruction which such transportation would involve. How far the Roman civilisation influenced the native tribes otherwise than by creating a demand for certain artistic products of domestic use it is very hard to say; but the introduction of vessels of shapes and forms that were novel to them, and that served purposes suited to the Roman method of living and alien to their own, presumably produced some modifications of existing fashions. It is perhaps straining the evidence

unduly to say that the presence of Roman mortaria, of which we have found remains, signifies the adoption of a Roman style of preparing vegetable food, as certainly the acquisition of Roman glass bottles and beakers implies a change in the methods of storing and drinking liquors. These are mere trifles, but they indicate a line of inquiry on which further excavations on Traprain Law or other Romano-British sites in Scotland may in time throw light.

We must note our obligation to Dr James Ritchie of the Royal Scottish Museum for kindly examining the animal remains and for preparing the Report thereon which is appended; also to Mr George Macdonald, C.B., LL.D., for identifying the coins and drawing attention to their significance; as likewise to Mr Thomas May for assistance in determining the Roman pottery.

It remains to express again our indebtedness to the Right Honourable A. J. Balfour for permission to continue our excavations and to enrich the National Museum with the results thereof; and also to pay a tribute to Mr Pringle, our foreman, and his two assistants, whose enthusiasm and intelligent observation have once more been productive of such excellent results.

ANIMAL REMAINS FROM EXCAVATIONS ON TRAPRAIN LAW.

By JAMES RITCHIE, M.A., D.Sc., Royal Scottish Museum.

The bones of a few animals, scanty in numbers and in variety, were recovered from each of the three main occupations recognised on Traprain Law. They are the remains of food animals, but only a very few examples exhibit any trace of the actual handiwork of man.

The paucity of the remains is striking, and is probably due to several causes. In the case of every collection received, the bones were in a poor state of preservation; in most, bones of dense texture formed the great proportion—teeth, phalanges, ribs, and limb-bones,—and even these were frequently in a dry, friable, and disintegrating condition. This seems to indicate either that the soil was ill fitted for the preservation of bony material, or that, owing to the slow accumulation of debris, the bones lay so long exposed to the atmosphere that many crumbled to dust ere they were buried sufficiently deep for preservation. On the other hand, it is also highly probable that in those more or less central areas of the sites of occupation where the excavations were carried on, no large quantities of bones were ever deposited, but that to preserve the amenities of the dwelling area the remains of meals were cast upon one or more refuse-heaps outwith the immediate circle of the huts. This is

indeed suggested by a comparison of the remains found on the actual sites of occupation with those of the only general "kitchen midden" which has yet been examined in the area. Not only was the collection from the latter much larger in bulk, but the number of species represented was considerably greater.

Of the bones recovered, almost all have belonged to domesticated animals. The scarcity of the remains of creatures so generally hunted for food as the Red and Roe Deer suggests either that the inhabitants of Traprain Law were husbandmen rather than hunters, or (with less likelihood) that Deer were unusually rare in the locality.

The following is a summary of the distribution of the animal remains received by me:—

(1) UPPER LEVEL, site of two latest occupations. Period probably third or fourth century of our era.

A small collection of bones all belonging to a small-sized Ox, probably the extinct small Short-horned Celtic Ox.

(2) THIRD LEVEL, site of second occupation, and dating from the Antonine period in the second century, between 140 and 180 A.D.

Portion of lower jaw, teeth, and humerus of a small-sized Ox, probably the extinct Short-horned Celtic Ox.

(3) LOWEST LEVEL, site of earliest occupation, dating from the close of the first and beginning of the second centuries of our era.

Three small collections were received from this site, all containing dry, friable bones. In all the collections bones of the Short-horned Celtic Ox and of the Pig were common, and in two there were in addition molar teeth of a Horse of small size. All these animals were represented in some degree by very young individuals, as shown by the presence of teeth belonging to milk dentitions.

It is to be noted that none of the bones obtained from the occupied areas showed any such traces of human agency as were moderately common in the collection from a "kitchen midden" associated with the settlement.

(4) KITCHEN MIDDEN.—The collection from this general refuse-heap was larger and more varied than those from the sites of occupation, and the bones bore occasional marks of blows or cuts made by man, as well as indentations caused by the teeth of some carnivorous animal. The names in the following list are arranged in the order of abundance of the animals as judged by the frequency of their remains:—

i. *Celtic Short-horned Ox*—*Bos taurus longifrons* of Owen.—Many bones and teeth, including those of the milk dentition. Two frontal

fragments of skulls showed clearly where the horn-cores had been hacked off; one *os calcis* bore marks of cutting; and the end of a metatarsal bone had been bitten off, leaving the tooth-marks of a dog or wolf.

ii. *Pig*—*Sus scrofa*, L.—Three bones of an adult animal.

iii. *Turbary Sheep*—*Ovis aries palustris*, Rüt.—A femur and a few molar teeth.

iv. *Red Deer*—*Cervus elaphus*, L.—Base of a large antler, 6 inches in circumference above the first tine. One end was artificially cut and trimmed. Also a small antler of a two-years-old.

v. *Roe Deer*—*Capreolus capreolus* (L.).—A single large antler.

vi. *Grey Seal*—*Halichærus gryphus* (Fab.).—The upper portion of a tibia.

vii. *Rabbit*—*Oryctolagus cuniculus* (L.).—Lower jaw of a small individual.

viii. *Common Buzzard*—*Buteo vulgaris*.—A single radius which agrees in size and structure with that of this species.

xi. *Ling*—*Molva molva* (L.).—A single skull bone.

II.

NOTICES OF (1) THREE STONE CUPS FOUND IN A CAIRN IN ABERDEENSHIRE, AND (2) A SHORT CIST CONTAINING A BEAKER URN FOUND AT BOGLEHILL WOOD, LONGNIDDRY, EAST LoTHIAN.
By J. GRAHAM CALLANDER, SECRETARY.

THREE STONE CUPS FOUND IN A CAIRN.

More than forty years ago, while some ground on the south-eastern shoulder of the Hill of Scares, in the parish of Culsalmond, Aberdeenshire, was being trenched and reclaimed for agricultural purposes, a cairn of stones, probably of the Bronze Age, was removed. The site, which lies in one of the fields now included in Woodside Croft, is noted on the Ordnance Survey Map. No record of the discovery of any sepulchral deposit within the cairn seems to have survived, but two stone cups which were found during the removal of the cairn were secured by two local collectors of antiquities, and a third, which was not discovered until many years after, and that very unexpectedly, certainly came from the same source. The story of the third cup, like that of many outstanding relics in our National Collection, is surprising. A quantity of stones from the cairn was carted to the neighbouring hamlet of Colpy, some $\frac{3}{4}$ mile south of the site, as building material for a house that was being erected for the local ground officer. Some of these stones were not required for the building, and were allowed to lie behind the house on the spot where they had been emptied out of the cart until 1898, when the occupant of the dwelling thought of removing them. While so doing he found this cup, which he presented to me. From the length of the handle it might be termed a ladle as suitably as a cup.

Though I have been able to trace both of the first-mentioned cups, I have only seen one of them, and it is here illustrated along with my own specimen.

The first cup (fig. 1) is formed of steatite or soap-stone, and is a very good example of this class of relic. The bowl is circular, with a rounded bottom so flattened that it can stand without danger of overturning, and it is provided with a short handle placed about $\frac{1}{4}$ inch below the lip. The cup measures externally $4\frac{1}{4}$ inches in diameter across the mouth, and $2\frac{1}{2}$ inches in depth, and the cavity, which is almost perfectly circular, is some $3\frac{3}{16}$ inches in diameter and $1\frac{3}{4}$ inch in depth. the rim being about $\frac{1}{2}$ inch thick. Encircling the vessel is a flat

ornamental band or moulding placed about $\frac{5}{16}$ inch below the lip, and projecting slightly from the general contour of the bowl. It measures $\frac{3}{4}$ inch in width, and is formed by two incised parallel lines, with a central line placed midway between them. At irregular intervals, averaging about $\frac{1}{2}$ inch in length, the parallel lines are crossed by transverse lines slanting slightly from right to left, thus forming a double row of rhomboids around the cup. The handle, which projects $1\frac{1}{2}$ inch from the wall of the vessel, measures about 2 inches in width and 1 inch in thickness, is rounded at the end, and is pierced vertically by a hole $\frac{5}{16}$ inch in diameter. It is ornamented on the top by straight, incised lines which cross at right angles, the transverse lines being carried down the sides of the handle.

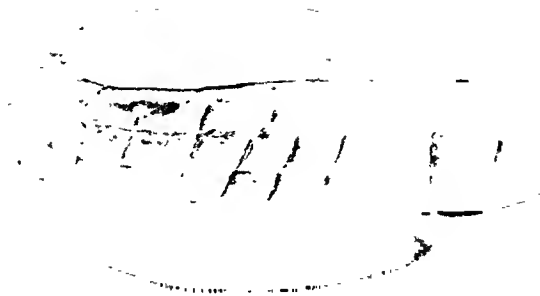


Fig. 1. Stone Cup found at Woodside Croft, Culsalmond. ($\frac{1}{2}$.)

The other cup (fig. 2) is made of what seems to be a decomposed diorite, or "heathen" as it is locally called, and is probably unique in the length of its handle and in the size of the perforation in it. The bowl is roughly semi-globular, and measures $3\frac{1}{4}$ inches in diameter externally, and $2\frac{5}{8}$ inches in height; the cavity is $2\frac{5}{8}$ inches in width and $1\frac{1}{4}$ inch in depth, and the lip tapers towards the brim. The handle is $4\frac{1}{2}$ inches in length, is rounded in section, and at the narrowest part near the centre measures $1\frac{3}{16}$ inch in diameter. It thickens towards the junction with the wall of the cup, about $\frac{1}{4}$ inch below the lip, and at the extremity, which is flattened and pierced vertically by a hole $\frac{5}{8}$ inch in diameter. It bears no ornamentation.

Cups of stone with short handles, frequently perforated for suspension by a thong, have apparently been used as drinking cups, and are not to be confused with hollowed stones of less regular shape without

handles, which belong to the same period, and seem to have been used as lamps. Some of the latter have simply a circular cavity on the top, others have a hollow on one side of the cavity for the wick, and occasional examples roughly cut into a rude resemblance of some of the Roman lamps of clay are doubtless the precursors of the iron cruisie.

Handled cups of the type under review (fig. 1) have been found in considerable numbers in Scotland. Their range is from Shetland to the Stewartry of Kirkeudbright, and from Skye to Aberdeenshire, being most abundant in the latter county. They occur less frequently in Ireland, and though one at least has been noted from the Isle of Man, Sir John Evans does not mention a single specimen from England.¹



Fig. 2. Stone Cup found at Woodside Croft, Culsalmond. ($\frac{1}{2}$.)

While the great majority of the Scottish cups are casual finds, picked up in fields unassociated with other objects, a fair number have been recovered from anciently inhabited sites in association with other relics by which it is possible to tell their approximate age. Like many other objects dating from prehistoric times, antiquaries of the first half of the last century had no hesitation in describing them as the handiwork of the Druids. But though Sir Daniel Wilson in 1852 contributed to the Society a paper entitled "On the Class of Stone Vessels known in Scotland as Druidical Pateræ," it is quite evident that he did not consider the Druidical theory satisfactory. A few of the specimens preserved in our National Museum are recorded as found on, or near, sites of Bronze Age monuments. In the paper just

¹ Cups of Kimmeridge shale found in England belong to a different class of drinking vessel, as they have been turned in a lathe (*Ancient Stone Implements*, p. 445).

referred to, mention is made of two found, in 1828, under stone paving in the immediate vicinity of the stone circle at Crookmore, Tullynessle, Aberdeenshire, another found "within the area of the celebrated Hebridean circle at Classernish" (Callernish),¹ and one found within a stone circle at Whiteside, Aberdeenshire. The first two of these cups are preserved in the National Museum. Other two specimens in that collection are recorded as having been found in a cairn at Newton of Auchingoul, Inverkeithney, Banffshire,² and in a tumulus at Gallowflat, Rutherglen.³ Although these records are suggestive, particulars of discovery are not so definite or detailed as to permit us to place the period of origin of the stone cup within the Bronze Age. And even the evidence adduced in this notice of the discovery of these three cups is faulty, as there is nothing to show that they were not found actually on the surface of the cairn, in which case they would probably not be contemporary with the construction of the monument.

When we come to the succeeding period, the Early Iron Age, the case is quite different, as a goodly number have been found in structures, such as brochs and crannogs, which belong to this time. Part of a cup of steatite with a short perforated handle was found in a crannog, at Hyndford, near Lanark,⁴ remarkable for the relative number of objects characteristic of native sites occupied during the time that the Romans were in Scotland which it produced, the relics including Roman pottery, a small penannular fibula, melon-shaped beads of glass, a very fine beaded torc of bronze, three spiral rings of bronze, stone moulds for ingots, portions of glass armlets, and a thin, circular, polished disc of stone. Two cups in the Museum were found near a large cairn on the south slope of Knockargity, near Tarland, Aberdeenshire,⁵ in a square-shaped hollow lined with stones and containing ashes in the centre; these hollows were locally known as "Pict's Houses," and many of them were to be seen in Cromar. In the article in which they are described, cairns, stone circles, and "very small circles of upright stones," possibly what we would now call hut-circles, are said to have been "frequent in the district." These stone cups have been discovered not infrequently in brochs, and the collections in the Museum from these structures include a typical selection. Amongst these may be mentioned one from the broch of Kintradwell, or Cinn Trolla, Sutherland, which was found beside the topmost of the five steps leading down to a neatly built well within the building,⁶ and two of three found in Dun Telve, one of the brochs at Glenelg, on the west coast of Inverness-shire, taken over by

¹ *Proc. S.A. Scot.*, vol. i. p. 117.

² *Ibid.*, vol. xl. p. 47.

³ *Ibid.*, vol. i. p. 261, and vol. vi. p. 89.

⁴ *Ibid.*, vol. i. p. 138.

⁵ *Ibid.*, vol. xxxiii. p. 381.

⁶ *Arch. Scot.*, vol. v. p. 97.

the Office of Works. The Glenelg examples are roughly fashioned with short perforated handles, and two of them, those in the National Collection, are of small size.

So far none of the class of cup under review has been found on the native hill fort at Traprain, and they have not been found in any of the excavations carried out by the Society on Roman stations, although contemporary relics of native manufacture have been found in large numbers. This is not surprising, as it is hardly to be expected that rude stone cups would be used by communities well supplied with the more suitable wares of the Roman potter. At Dunadd, another native fort, not a single example was recovered. A cup, in the Museum, was found at Inchtuthil,¹ but there is no record whether it came from the site of the Roman camp there, or from the native promontory fort in its near neighbourhood.

Many of the cups are very rudely formed and bear no ornamentation, while others display a good deal of skill and care in their manufacture. The decoration, when such exists, is invariably done in geometric patterns formed by straight lines incised on the wall and handle of the vessel. The ornamental motif is more that of the Bronze Age than of the Early Iron Age, and the wall of one cup, from the so-called Pict's House at Knockargity, is ornamented with three bands of design bearing a striking resemblance to that seen on many drinking-cup or beaker urns of the first-mentioned period. The difficulty of carving curved lines on stone does not explain the absence of this motif, as a number of our Scottish carved balls, probably belonging to the Early Iron Age, bear intricate curvilinear patterns beautifully cut on their projecting discs. With the information presently at our disposal we can only say with safety that such cups were in use in the first centuries of this era, that the circumstances of the discovery of several, along with their style of ornamentation, are suggestive of a rather earlier date.

Since the foregoing notes were written, the second year's excavations carried out on the vitrified fort of Dunagoil, in the island of Bute, by the Marquess of Bute, under the auspices of the Buteshire Natural History Society, have been described,² and among the numerous and important relics recovered from that site are portions of two short-handled cups of steatite, and several blocks of steatite bearing tool-marks, showing that objects of this material were manufactured on the spot. The excavators consider that Dunagoil has been occupied in earlier times than the Roman stations in Scotland and the excavated portions of the fort on Traprain Law. While the period of occupation of the last-mentioned site cannot be put back further than the last part

¹ *Proc. S.A. Scot.*, vol. xliv, p. 220.

² *Trans. Buteshire Nat. Hist. Soc.*, vol. ix.

of the first century A.D., it is believed that the former was occupied before the dawn of the Christian era. Amongst the evidence adduced may be mentioned the absence of rotatory querns and the abundance of saddle querns, the non-appearance of any traces of Roman influence such as Roman pottery or coins, and the discovery of a number of ornamental bronze and iron pins believed to be of very early types.

A SHORT CIST CONTAINING A BEAKER URN.

On the 12th of April last year, a short cist of Bronze Age date was discovered on the Gosford estate of the Earl of Wemyss; and notice of it having been sent to the Museum, I visited the site two days after. By that time the grave had been cleared out, but the structure still remained in position. The site lies in the Boglehill Wood, near Longniddry, some 200 yards south of the shore of the Forth, and 50 yards east of the road through Longniddry Dean, near the summit of the steep slope on the north-western shoulder of the plateau which rises about 50 feet above sea-level. In the course of clearing the ground of wood to form a golf-course, the trees were overthrown and not cut. The roots of one of the trees had grown round and clasped the cover stone of the cist, and as the tree fell it lifted the slab, exposing the grave.

The cist lay almost due east-north-east and west-south-west, and was formed of four fine, thin slabs, averaging about 3 inches in thickness, set on edge. It measured 2 feet 5 inches in length along the north side, 2 feet 11 inches along the south side, 2 feet 3 inches in breadth across the east end, 2 feet 5 inches across the west end, and 1 foot 9 inches in depth. The cover stone, which was almost square with rounded corners, was 4 feet 1 inch long, 3 feet 10 inches broad, and 6 inches in thickness, and was covered by 6 to 8 inches of soil. The slab at the east end slightly overlapped the ends of the side slabs, and that at the west end was placed inside those on the sides, the northern slab projecting about 6 inches beyond it, as if the western slab had been forced inwards by the pressure of the soil for about 6 inches at its northern end. The slabs fitted closely at the corners, and there was no indication of their having been packed with clay, as is sometimes noticed in Bronze Age short cists. When the cist, which was full of soil, was cleared out, the fragments of an urn were found lying in the north-eastern corner of the grave. It was supposed that the vessel had been broken when the parts of the roots of the tree which had grown into the cist were wrenched out. Small pieces of burnt wood were detected in the soil near the bottom of the grave.

CIST CONTAINING A BEAKER URN FROM LONGNIDDRY. 151

Fortunately the fragments of the urn recovered represent more than the half of the vessel, and, on being pieced together, have produced an example of the beaker or drinking-cup type (fig. 3), with a straight, upright brim. The urn is $6\frac{3}{4}$ inches in height, $5\frac{1}{2}$ inches in diameter at the mouth, $5\frac{3}{8}$ inches at the bulge, and $3\frac{1}{4}$ inches across the base, the wall being about $\frac{5}{16}$ inch thick at the lip, which is flat. The outside of the wall bears two broad zones or bands of decoration roughly impressed on the clay with a comb-like stamp, the first between the neck and the brim, and the second round the bulge. The higher band of ornament consists of straight lines slanting slightly from right to left crossed by more oblique lines, all contained between two marginal, straight, transverse lines, below which is a series of crossed lines forming an irregular lozenge pattern; the lowest band of ornament is also composed of two parts, a band of chevrons, the apex pointing to the right, with a straight marginal line above, and a band of roughly crossed lines below.

The thanks of the Society are due to the Earl of Wemyss, the proprietor of the ground, who has presented the urn to the National Museum.



Fig. 3. Urn from Boglehill Wood, Longniddry.

MONDAY, 14th February 1916.

The HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

A Ballot having been taken, the following were duly elected:—

HENRY COATES, Curator of the Perthshire Natural History and Anti-
quarian Society Museums, Corarder, Perth.

WILLIAM MARTIN, J.P., 24 Athole Gardens, Kelvinside, Glasgow.

ALEXANDER PHILIP, LL.B., F.R.S.E., The Mary Acre, Brechin.

T. AIKMAN SWAN, A.R.I.B.A., 29 Hanover Street.

DAVID WATERSON, R.E., Fellow, Royal Society of Painter-Etchers.
Lond., Bridgend House, Brechin.

Mrs ESTHER WINDUST, Pioneer Club, 9 Park Pl., St James's, London, S.W.

The following Donations were announced, and thanks voted to the
Donors:—

(1) By JOHN BORLAND, Auchencairn, Parish of Closeburn, Dumfries-
shire.



Fig. 1. Beaker Urn from Auchencairn.
Dumfriesshire.

Urn of beaker type, imperfect, $10\frac{3}{4}$
inches in height, as reconstructed,
7 inches in diameter at the bulge,
 $4\frac{3}{4}$ inches in diameter at the base
(fig. 1).

Oblong Implement of dark grey
flint, $2\frac{1}{8}$ inches in length, $\frac{7}{8}$ inch in
greatest breadth, triangular in sec-
tion, the point rounded by rubbing.

Both found in a cairn at Auchen-
cairn, excavated in 1894.

(2) By GORDON PURVIS ADAM,
The Elms, Galashiels.

Oval Token of lead, measuring
 $1\frac{3}{8}$ inch by $1\frac{1}{8}$ inch. *Obv.*: Figure
of the Virgin standing with out-
stretched arms, her head surrounded
with a nimbus, the background
studded with stars, within a border
much worn away, and on which the
words "who have" are still legible.

Rev.: The letter "M" above two hearts pierced with a dagger, both surmounting a processional cross with trefoil terminals to the arms, the background studded with stars. Found in the garden at "The Elms."

(3) By FRANCIS W. NISBETT, 28 Rutland Square.

Pair of ancient Slippers with high heels and uppers of yellow kid striped with white, bound at the edges with black braid. These are said to have belonged to Flora Macdonald, but the evidence for the attribution is very incomplete. They were exhibited at the Glasgow Exhibition in 1911.

Books for the Library:—

(1) By the PUNJAB HISTORICAL SOCIETY.

The Journal of the Punjab Historical Society. Vol. III., No. 2, pp. 71-158. Calcutta, 1915.

(2) By Professor G. BALDWIN BROWN, F.S.A.Scot., the Author.

The Arts in Early England. Vols. III. and IV. Saxon Art and Industry in the Pagan Period. London, 1915. 8vo.

(3) By GEORGE MACDONALD, C.B., F.B.A., LL.D., F.S.A.Scot.

Die Moorbrücken im Thal der Sorge auf der Grenze zwischen Westpreussen und Ostpreussen, von H. Conwentz. Dantzig, 1897. 4to.

Das Varuslager im Habichtswalde bei Stift Leeden, von Professor Dr. F. Knocke. Berlin, 1896. 4to.

Die römischen Moorbrücken in Deutschland, von Professor Dr. F. Knocke. Berlin, 1895. 8vo.

Sketches from the Traditional History of Burghead; with an Introductory Historical Chapter by Alexander Jeffrey, jun. Elgin, 1863. 8vo.

(4) By LUDOVIC M'LELLAN MANN, F.S.A.Scot., the Author.

Archaic Sculpturings, Notes on Art, Philosophy, and Religion in Britain, 2000 B.C. to 900 A.D. Edinburgh and London, 1915. 8vo.

(5) By Principal Sir WILLIAM TURNER, K.C.B., D.C.L., D.Sc., M.B. F.R.S., F.S.A.Scot., the Author.

A Contribution to the Craniology of the People of Scotland. Part I. Modern — Anatomical. Part II. Prehistoric — Descriptive and Ethnographical. Reprinted from Transactions Royal Society of Edinburgh. Part I., 1903; Part II., 1915. 4to.

(6) By the NATIONAL LIBRARY OF WALES, Aberystwyth.

Bibliotheca Celtica: a Register of Publications relating to Wales and the Celtic Peoples and Languages, 1910, 1911, 1912. Aberystwyth, 1912, 1913, 1915. 8vo.

Catalogue of Tracts of the Civil War and Commonwealth Period relating to Wales and the Borders. Aberystwyth, 1911. 8vo.

The Laws of Howel Dda. From Llanstephan MS. 116 in the National Library of Wales. Edited by Timothy Lewis, M.A. London, 1912. 4to.

(7) By HIS MAJESTY'S GOVERNMENT.

Calendar of State Papers, Domestic Series, of the Reign of Anne. Vol. I., 1702-1703. 8vo.

PURCHASES.

Oval Badge of brass with silver mountings, of the 79th Cameron Highlanders, worn by Sergeant Alexander Cameron at Waterloo, measuring 3 inches by $2\frac{3}{8}$ inches.

Yorkshire Church Plate. Vol. II. Begun by the late T. M. Fallow, M.A., F.S.A., completed and edited by H. B. McCall, F.S.A. Leeds, 1915. 8vo.

The Growth of a Scottish Burgh: a Study in the Early History of Dumfries. By G. W. Shirley, F.L.A. Dumfries, 1915. 8vo.

The Antiquity of Man. By Arthur Keith, M.A., LL.D., F.R.S., Hunterian Professor R.C.S. London, 1915. 8vo.

The following Communications were read:—

I.

THE ANCIENT ROOF OF GLASGOW CATHEDRAL: ITS CONDITION AND RESTORATION. BY W. T. OLDRIEVE, F.R.I.B.A., F.S.A. Scot.

Only two of our Scottish mediæval cathedrals have, with any part of their original roofs, survived the stress of time until this generation, that of St Magnus at Kirkwall, and that of St Mungo at Glasgow. It must therefore be a matter of interest to antiquaries when such a roof is laid bare, its condition exposed, its construction and subsequent treatment traced, and its original design restored. For this reason it was thought advisable to lay before this Society and to record in its *Proceedings* an account of what has been done within recent years in connection with the renewal of the roof of Glasgow Cathedral.

The work was carried out at the cost of the Treasury and under the direction of H.M. Office of Works, and was, as will presently be shown, absolutely necessary in order to prevent a total collapse of the building.

Many and various have been the definitions of the term "restoration" as applied to architectural works, and monstrous indeed have sometimes been the results. During the eighteenth and nineteenth centuries especially, what appalling errors of destruction and disfigurement were committed under this pretentious term! Whims of corrupted taste or of a passing fashion of form were allowed licence, and in many cases original work of great merit was cut away or mutilated to make room for modern work so devoid of character that it seems incredible that the artistic standard of the day should have been so low that there was no general outcry against the vandalism.

Such a "restoration" was perpetrated when in the eighteenth century the original design of the roof of this Cathedral was deliberately obliterated by the simple process of hacking away the oak moulded ribs, carved work, and panel-boarding, in order to substitute a commonplace plaster ceiling. The original oak roof-work had doubtless fallen into decay, and to repair or renew it in such a way as to preserve intact the old design and character would perhaps have been both too costly and beyond the vision of those who were at that period responsible.

Before proceeding to give an account of the condition of the roof immediately before the restoration, it may perhaps be better to state a few historical facts bearing upon the subject.

The foundation of the See by St Kentigern, or Munghu, dates from the sixth century.

In July 1136, John, Bishop of Glasgow, in presence of King David the First, dedicated a new church to St Kentigern.

After destruction by fire the church was commenced to be rebuilt in or about 1190, in more magnificent style, by Bishop Joceline, Chancellor to King William the Lion, and was dedicated in 1197. It was added to and embellished from time to time by successive prelates, chiefly Bishops Bondington, Lauder, and Cameron.

An interesting statement bearing upon the subject of the timber supply is made in the *Origines Parochiales Scotiæ*, viz. that Bishop Robert Wishart (1272-1316) obtained timber from Edward the First for making a steeple to the Cathedral, but "used it for constructing engines against that king's castles."¹ In 1277 the Church purchased the right from the Lord of Luss of sending their workmen freely to his lands to fell and prepare whatever timber in his woods they deemed expedient for the steeple and treasury of the Cathedral, until these were perfectly completed in woodwork.²

Bishop Robert Blackadder, transferred about 1484 from Aberdeen to Glasgow, constructed the Rood loft, the descending approaches to the crypts, and commenced the erection of the south transept, completing only the lower story or crypt which is known by his name.

In 1574 the Magistrates, Town Council, Deacons of Crafts, and other "honest men of the city" voluntarily resolved to impose a tax of £200 for the repair of the Cathedral because of the great decay into which it was falling through "takeing awaye of the leid, sclait and uther graith thair of in this trubulous tyme by-gane." The great care, pains, and charges incurred by the community for this object were acknowledged by Charles the First.³

The General Assembly in 1587-8 "ordained that an article should be given in to the King bearing regrate for the decay of certain Kirks which are ruinous, and without hastie repare are not able to be remedied, namely:—Glasgow, Dunfermling, Dumblain." The General Assembly suggested that "the lead fallen, or like to fall, may be employed to the selating and repairing thereof."⁴

It has been suggested with good reason by Dr John Hill Burton that "the Cathedral of St Mungo owed its preservation to the wealth and liberality of the community of Glasgow, and that the other churches which rivalled or excelled it—Elgin, St Andrews, the Abbey Church of Arbroath, and others—fell to pieces through poverty."⁵

¹ *Origines Parochiales Scotiæ*, vol. i. p. 2.

² Cosmo Innes' *Sketches of Early Scotch History*, p. 45.

³ *The Reformation in Scotland*, Dr Hay Fleming, p. 392.

⁴ *Booke of the Universall Kirk*, vol. ii. p. 706.

⁵ *History of Scotland*, vol. vi. p. 222.

In a minute of the Town Council, dated 13th June 1663, there is an entry as follows: "The same day appoynts the kay [quay] at the Broomilaw to be heightit twa stanes heigher nor it was ordained to be of befor, and ordains the Deane of Gild to try for moir oakin timber ather in the Hie Kirk or bak galrie for facing thereof."

In M'Ure's *Description of Glasgow*, published about 1736, the choir—then called the Inner or Easter Kirk—is referred to as "newly ceiled and painted in the roof and walls whitened"; while of the nave—the western part of which was then called the Outer or West Kirk—it is said, "The roof of this kirk is finely ceiled and painted." This appears to indicate about the date when the original design of the ancient roof was obliterated, the internal lining of oak removed, and the roof "newly ceiled" with plaster.

It is well known to students of the Cathedral that there are abundant evidences both at east and west ends and on the north side that large masses of the main walls have moved considerably through the "thrust" of the stone vaulting of the aisles and the timbers of the main roof. My attention, as architect at H.M. Office of Works, was drawn to this about 1905, when steps were taken to strengthen those parts urgently requiring it. It was clear from an examination of the masonry that a considerable amount of work had previously been done, probably in 1824, with the object of strengthening the upper parts of the main walls; but the old roof exercised a continual outward thrust, and exact measurements proved that this was so great as to constitute a very serious risk if the roof were allowed to continue to deteriorate by decay. From a general view, however, no casual observer would detect any deviation from a straight line in the roof or walls.

Measurements with the plumb line were taken at intervals, and it was found in 1909 that the maximum thrust was over the central north pillar of the nave, where, from the top of the capital of the main pillar to the wall-head, the wall-face was falling outward to the extent of $13\frac{3}{8}$ inches. In the choir the maximum thrust was on the south side near the second detached pillar from the east end, where the face of the wall was leaning outward at the top to the extent of $13\frac{1}{4}$ inches.

The views shown indicate better than any description which I can give what was discovered as regards the general state of the roof. Standing at one end of the gutter on either side of the nave or choir, and glancing along the parapet, what should be seen as a straight line is a very considerable curve (see fig. 1): indeed, to any one unaccustomed to ancient buildings the first impression is truly alarming, and suggests instability and danger which really do not exist if the process of the outward thrust is arrested.

Following upon the test by measurement, a detailed inspection of the roof timbers was made—first from the interior space above the collars of the trussed-rafters, and then from the outside by stripping

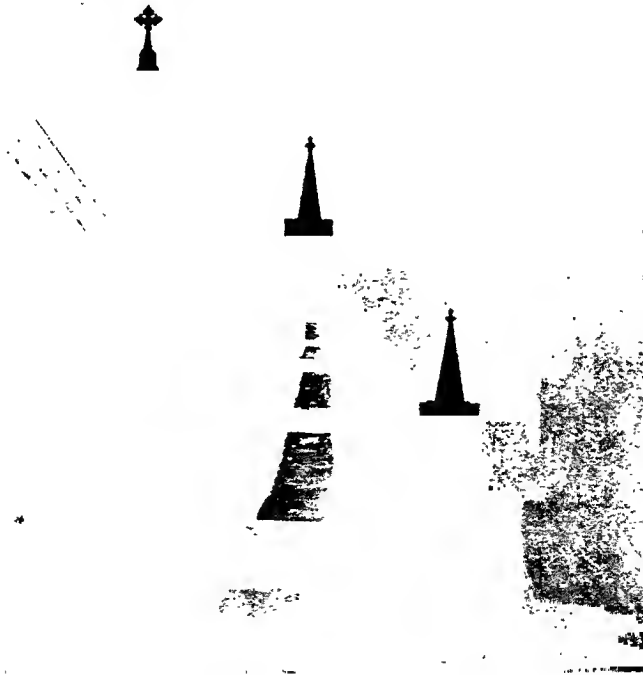


Fig. 1. North Gutter of Roof over Nave, looking west, showing "bulge" of wall caused by thrust of old roof timbers.

the lead and boarding near the feet of a number of the rafters and noting their condition, as in fig. 2. It was found that a large number of the rafters were badly decayed, and that the repairs carried out about 1735 and 1824 had not appreciably strengthened the roof trusses. In several cases the lower ends of the rafters had entirely disappeared,

and had no bearing whatever upon the wall-head, as shown in figs. 2 and 3.

A full report upon the condition of the roof was now submitted to the Board of H.M. Office of Works, with plans and estimate; and



Fig. 2. Condition of an old Oak Rafter over Choir, as seen from the outside.

after a report by the Inspector of Ancient Monuments, and upon the urgency of the case being made known to the Lords of H.M. Treasury, funds were in due course provided for the necessary expenditure.

There is no evidence that stone vaulting was originally contemplated for roofing this Cathedral. If the proposed addition of stone vaulting, as shown over the nave in the set of drawings for a restoration in 1836,

had been carried out, the result would almost certainly have been the wreck of the building, as in the case of Holyrood Chapel Royal in 1768.

It is perhaps necessary here to trace very shortly the development of mediæval church timber roofs. Of Norman church timber roofs few remain. One over the chancel of Adel Church, Yorkshire, is referred to as apparently original in Brandon's *Analysis of Gothic Architecture*,

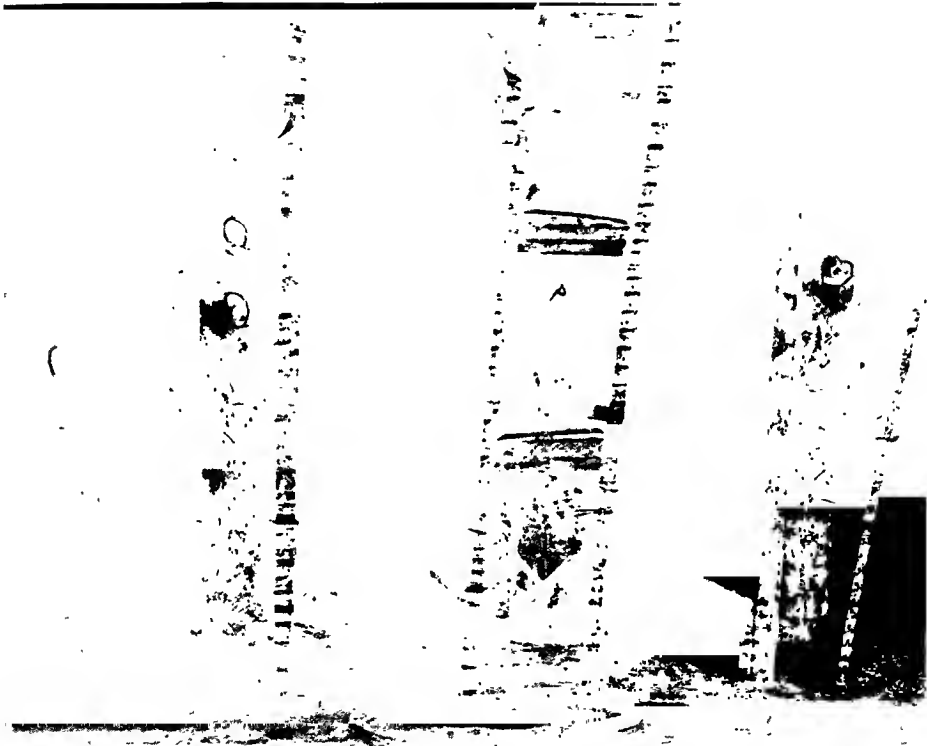


Fig. 3. Condition of old Rafters of Choir Roof, as seen from the inside, when stripped of plaster and lathing.

as also one over the nave of Whitwell Church, Rutland.¹ The best-preserved Norman roof is said by Mr Francis Bond to be that above the Bishop's Palace at Hereford, as also that the south transept at Winchester has the original eleventh-century roof.² These early roofs were of the "tie-beam" type, the tie-beam evidently being at that time intended to form a tie between the walls of the building, and not

¹ Brandon's *Analysis of Gothic Architecture*, vol. i. p. 91.

² *Gothic Architecture in England*, p. 572.

the tension member of the roof-truss as in modern carpentry. In this type the principal rafters pitch on to the tie-beam and are braced together with collars, while slanting struts stiffen the principal rafters by taking the weight on to the tie-beam as a cross-strain.

Gothic church roof design developed under four main types, *i.e.* :-- (A) tie-beam, (B) trussed-rafter, (C) arch-braced, and (D) hammer-beam. Fig. 4 shows by a simple outline diagram the development of the timber roof. The tie-beam type (A) is indicated by (2), (3), and (4); the trussed-rafter type (B) by (5), (6), and (7); the arch-braced type (C) by (8); and the hammer-beam type (D) by (9). There were, however, no hard-and-fast divisions between the different types. Gothic builders had no compunction in mixing tie-beam and trussed-rafter types, tie-beam and arch-braced, tie-beam and hammer-beam, or hammer-beam and arch-braced.

Sandridge Church, Herts, affords an example of the transitional form of roof where the tie-beam has been retained at intervals, *i.e.* two ties in the length of the chancel, with about twelve rafters between each.

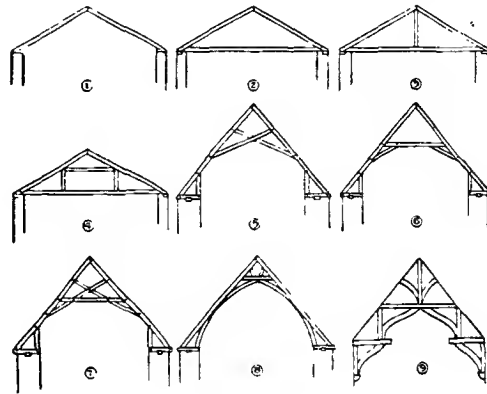


Fig. 4. Diagram to show development of the Timber Roof.

A similar example is that over the nave of Clymping Church.¹ Bloxam refers also to the roof of the chancel of Polebrook Church, Northamptonshire, which he says is apparently in this style. It is divided into three bays by moulded tie-beams with braces beneath, and each tie-beam supports a king post. The principals, which are massive, are cut in the form of a trefoil; the purlins, ridge-piece, and wall-plates are moulded; but the common rafters are plain.²

One great defect of the trussed-rafter type of construction, open or ceiled, was the absence of any longitudinal tie other than the wall-plate. A view, shown by fig. 5, of the old trussed-rafters of the nave, as exposed at Glasgow after removing the outside boarding, shows how the rafters have gradually moved over (about 12 inches at the apex) under pressure from the prevailing west wind. There can be little doubt, that but for the boarding and the resistance of the

¹ *Parish Churches*, Brandon, p. 75.
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² *Gothic Architecture*, Bloxam, p. 180.

tower, the roof would have collapsed for want of a longitudinal tie along the ridge.

As Early English church-building developed, the simple trussed-rafter type of roof without tie-beams became the favourite style, and continued into the "Decorated" period. Brandon affirms¹ that the remaining examples of this type of roof are more numerous than

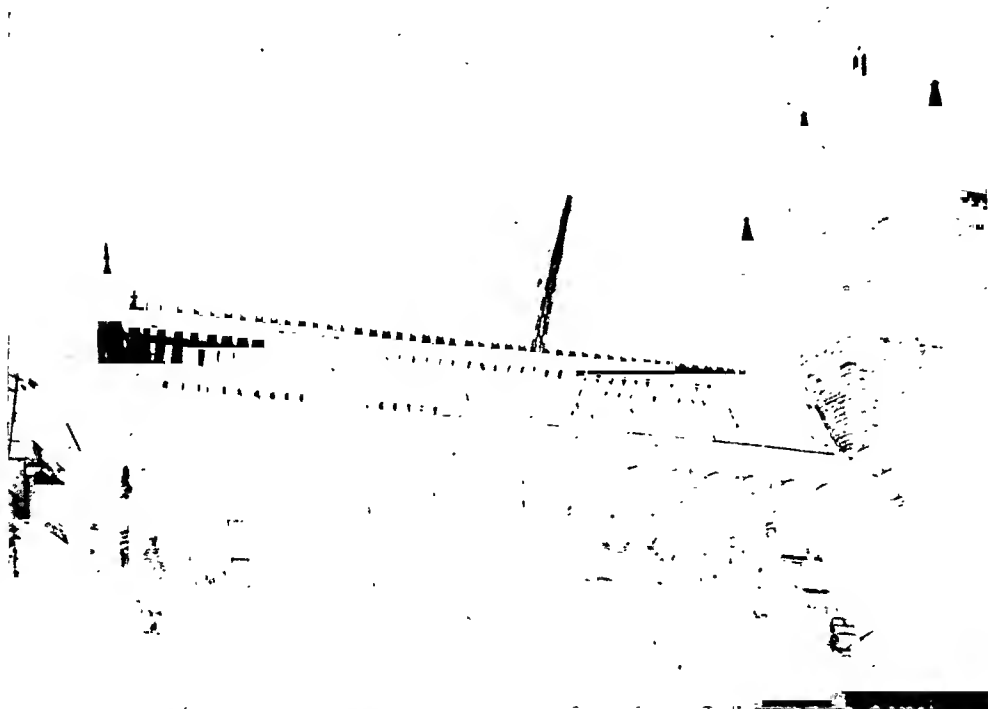


Fig. 5. Old Roof over Nave, showing the rafters leaning over to eastward.

any others, but that in most cases they have been lathed and plastered, though probably they were originally sometimes boarded.

Lympenhoe Church is a good example of the open trussed-rafter type of roof, and Wimbotsham provides an example of a somewhat similar type boarded and panelled by moulded ribs underneath.

No inscriptions or coats-of-arms have been found upon the old oak roof at Glasgow to furnish a clue to the exact date of its construction: there has been some misconception on the subject through a misstatement in 1736 by M'Ure. In Gordon's edition of M'Ure's *History of Glasgow*² it is stated that the coat-of-arms of Bishop Walter Wardlaw

¹ *Analysis of Gothic Architecture*, vol. i, p. 92.

² Vol. i. p. 60.

"is placed near the middle of the choir, on the right side of the high altar, where has been an altar for him. Over it on the roof of the area is his coat-of-arms finely illuminate." The fact is, as anyone may see, that the shield with "arms" and the words "Walterno Cardinalis" are not on the roof of the choir at all, but upon the stone vaulting of the south aisle at the second bay eastward from the south transept.

When it was ascertained that the condition of the ancient timbers of the Glasgow roof was such that most of them could not possibly be safely retained, steps were taken to ascertain from a very careful examination of the remains of the old timbers every detail which would throw light upon the original work, and to endeavour to follow in the reconstruction of the new roof the guidance thus obtained.

ROOF OVER CHOIR.

We first dealt with the choir, constructing a temporary flat roof so that the church services should not be interrupted.

Upon the naked timbers being exposed by the removal of the plaster ceiling, diagrams, sketches, and photographs were prepared and fragments of detail which would help to elucidate the problem carefully noted, all peg-holes being marked and plotted in their correct positions. By these means certain disputed points were clearly settled. For instance, it was found that there could hardly have been tie-beams—as some at first thought probable—because the details of the old jointing at the foot of the rafters varied so much that this appeared impossible. The method of connecting the rafters and struts to the existing cross pieces upon the wall-head would have been out of the question for the purpose of a tie-beam. That originally there was internal boarding was also clearly proved, because fragments of the actual oak boarding and grooves were found upon some of the principal rafters. One fragment only was found to indicate at all clearly the character of the moulded principal rafters (see fig. 6), and this was, of course, carefully measured and drawn full size. From this fragment it was possible to construct the contour of the original mouldings.

The position of the peg-holes indicated, it was thought, where the carved bosses had been fixed at the junctions of the moulded ribs, and it became evident that the original division of the ceiling into panels had been followed when the plaster ceiling was substituted, although the character and spirit of the original work had been entirely lost.

The greatest surprise of all was to find that the original rafters

had been shaped so as to form a trefoil or cusped roof: the shape of the old rafters is shown in fig. 6. When we first examined the roof from the interior space near the ridge, it was only possible by the light of a lantern to look down between the outer boarding and the

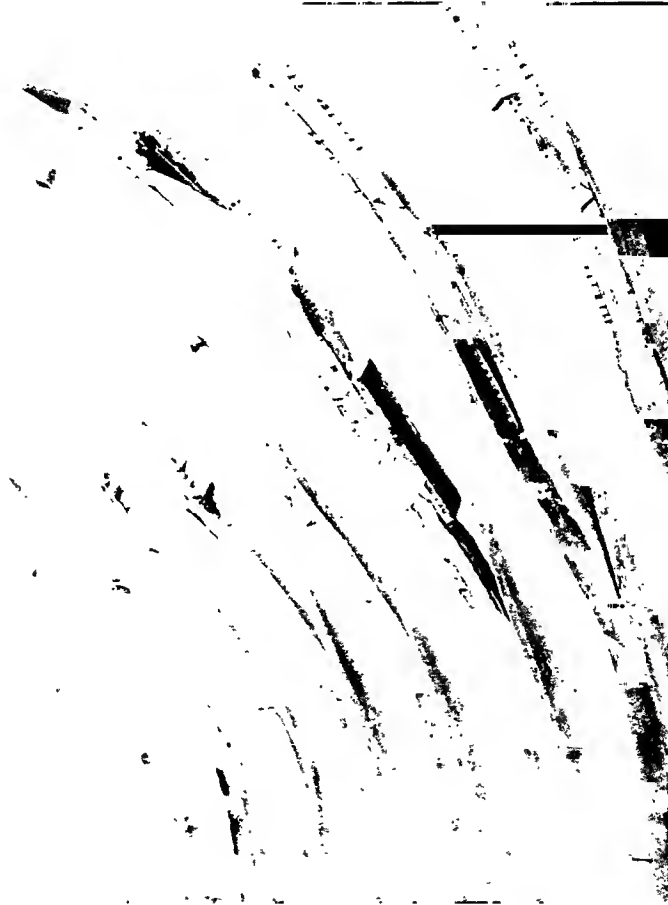


Fig. 6. Showing trefoil, or cusped, form of Rafters of Choir Roof, with fragment of moulding at apex.

plaster ceiling, and in one or two instances to crawl down into a very limited space so far as one could reach. It had not occurred to anyone, so far as I am aware, that the uneven-shaped timbers were all carefully shaped in order to form the cusped design, which is a most unusual, if not unique, form for the trussed-rafter type of roof to take in a church of large dimensions.

The ancient roof timbers of the choir were found to be of the following dimensions:—Rafters, 8×8 inches; collars, $7\frac{1}{2} \times 7\frac{1}{2}$ inches; braces, $8 \times 7\frac{1}{2}$ inches; wall-plates, 8×8 inches; cross-plate, 8×8 inches. The span is



Fig. 7. Old Timbers of Nave Roof, as seen when stripped of plaster and lathing.

25 feet 2 inches at the east gable and 25 feet $3\frac{1}{2}$ inches at the west end. The maximum span where walls have bulged is 25 feet $11\frac{1}{2}$ inches.

ROOF OVER NAVE.

It was found on exposing the ancient timbers of the roof over the nave, as shown by fig. 7, that, unlike the choir roof, there was no

evidence whatever of there ever having been internal boarding. The timbers themselves were, as shown by fig. 8, of the same trussed-rafter type, but without the trefoil suggestion, while the length of the nave was divided into bays by massive bowtell-moulded lower edges to the



Fig. 8. View of the old Timbers at apex of Nave Roof.

principal rafters over the main wall-shafts, as seen by fig. 9. Evidently there had been tie-beams at these points.

The condition of the old rafters is indicated by fig. 10; and while separate members of the old trusses have been re-used wherever the old oak was found sound enough for this to be possible, only one comparatively complete truss could be used in the nave roof, and only one complete trussed-rafter of the roof of the triforia.

FUTURE STABILITY.

It was necessary in order to ensure the future stability of the edifice to reinforce the strength of the timber roof, especially in



Fig. 9. One of the principal Rafters of Nave Roof, showing remains of bowtell moulding.

respect of those parts where the construction was known to be defective, by hidden supplementary steel. This was achieved, firstly, by relieving the main walls of outward thrust, and, secondly, by providing longitudinal rigidity. So far as the choir is concerned these objects have been attained by setting steel trusses at intervals of about

12 feet between the rafters, sufficiently strong to resist the entire strain of dead load plus stress of wind and weather, and by means of steel joists as purlins to transmit the weight of the whole of the oak trussed-rafters to the steel trusses, so that there can be nothing but vertical pressure upon the walls. In the second place, longitudinal rigidity has been attained by means of these steel purlins riveted to the steel ribs and built into the walls of the tower and the east gable, also by



Fig. 10. Condition of old Rafters of Nave Roof at the wall-head.

continuous double steel wall-plates upon the wall-head. The steel reinforcement has in the nave also been adopted in such a way as to relieve the timbers of excessive strain both laterally and longitudinally: the tie-beams have steel fitch-plates 12 inches \times $\frac{1}{2}$ inch secured by adequate angle plates and bolts to steel angles 6 \times 6 inches, and resting on double steel wall-plates 3 inches \times 1 inch, such wall-plates forming, as in the choir, continuous longitudinal straps anchored at the ends to the tower and to the west gable. Other two similar steel bands 3 inches \times $\frac{1}{2}$ inch form a sufficient ridge tie to resist any possible strain longitudinally at the apex of the roof. Architecturally I should have preferred to omit the

tie-beams, but this could not have been done with permanent safety. On the other hand, I did not feel free to recommend an entire departure from the original type of roof in order to obtain what might be considered a better architectural result.

The weight of the roof throughout has been reduced considerably by the substitution of copper sheeting for lead or slate.

RE-USE OF THE ANCIENT OAK.

As much as possible of the old oak has throughout been re-used, not only because of its historical interest, but because of its beautiful mellow-brown colour. This, however, involved considerable extra expenditure in selecting and cutting out from the old timber suitable sound blocks, and in the increased labour in carving, the material having become through age extremely hard as compared with new oak.

INCIDENTAL "FINDS."

It is always interesting, when engaged upon works of this kind, to take note of what may throw light upon past history, especially when anything is found in parts usually inaccessible. It may therefore be worth while, in conclusion, to mention a few incidental "finds" which have come to light.

It is probably well known that until about seventy years ago the west end of the Cathedral had a consistory house at the south-west angle and a clock tower at the north-west angle. The former was demolished in 1846 and the latter two years later, the present rather tame west gable being then erected. When the old loose masonry at the west end of the north gutter of the nave roof was taken down to get proper anchorage for the ends of the steel wall-bands, four well-worn steps of a spiral turret stair were found in their original position which evidently led to the tower roof. These steps are now the only reminder of the vanished tower. They have been carefully pointed for preservation, and can be seen by the curious from the north gutter.

Another most interesting surprise was the discovery, while cleaning the interior stonework over the great east window, of a beautifully sculptured head of an angel or female—perhaps in mediæval days the terms were synonymous!—the face downward, and within a recess in the thickness of the wall, so that it could only be seen close at hand, by peering up at an acute angle with the wall face. It is impossible, as one contemplates this beautiful piece of work in such a position, to avoid questioning the object of the designer, whoever he may have

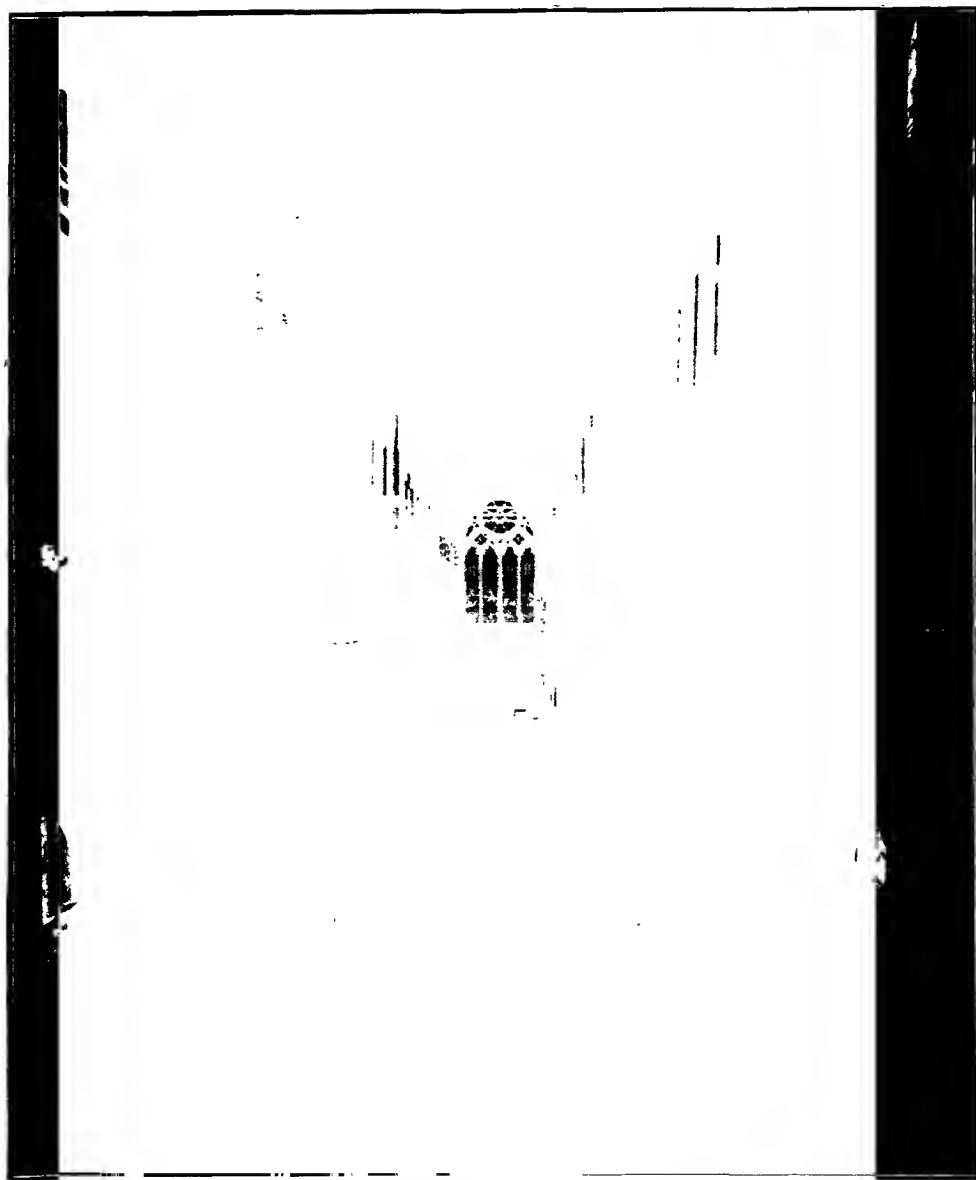


Fig. 11. Interior of Choir, looking west, and showing the oak roof restored.



Fig. 12. Interior of Nave, looking west, and showing the "open-timbered" oak roof restored.

been. A grotesque might have suggested some fanciful freak on the part of the carver, but there is nothing of the kind here. Was the sculptor a man after Ruskin's own heart, who put his best into his work for its own sake and for the sake of the house of God? Most certainly this piece of work was not done "to be seen of men," like so much that is done in the world. Is there a still deeper significance? Perhaps the designer wished to express his deep reverence for that which was to be celebrated at the altar far beneath the figure. May he not have had in mind Isaiah's vision of the seraphim covering their faces with their wings, or the vision of St John when he saw angels round about the throne who fell on their faces and worshipped God? We may not, in the present days of Protestant enlightenment, be able to agree with or enter fully into the deeper motive of these mediæval craftsmen, but we may still, I think, learn the lessons of thoroughness, faithfulness, and reverence, which come to us through these six centuries from that bowed head of the shadowed recess.

The appearance of the interior of the Cathedral after the completion of the new roofs is shown by fig. 11 of the choir, and by fig. 12 of the nave.

II.

NOTES ON THE FIFTEENTH-CENTURY MANUSCRIPT IN THE ADVOCATES' LIBRARY KNOWN AS THE DUPUY BOOK OF HOURS
(MS. 18.7.18). BY W. K. DICKSON, LL.D., LIBRARIAN.

The manuscript which is the subject of this paper is a comparatively recent accession to the collection of mediæval MSS. belonging to the Faculty of Advocates. It was bequeathed to the Advocates' Library in 1894 by Mr Robert Newton Hayward, of 4 Whitehouse Terrace, Edinburgh. It is a Flemish Horæ or Book of Hours, written and illuminated in the latter part of the fifteenth century. It belonged for some generations to a French family named Dupuy.

Books of Hours are the most familiar kind of mediæval illuminated MSS. In the later mediæval period they were produced in large numbers in Flanders and Northern France. Strictly speaking they are not liturgical books; they are intended for the use of the laity in private devotion, as contrasted with the Missal and the Breviary, which were used in the public services of the Church—the Missal in the celebration of Mass, and the Breviary in the performance of the non-eucharistic offices.

The following account of a typical Book of Hours is given by Mr Falconer Madan, now Bodley's Librarian (*Books in Manuscript*, p. 139):—

“A Book of Hours is usually in some form or other the Horæ Beatae Mariæ Virginis. There are two offices of the Virgin: one, the greater, often found in the latter part of a Breviary; one, the lesser, usually found in Books of Hours. The ordinary composition of this lesser office, which is properly for the use, not of the priest as such, but of the laity, is as follows, the usual subjects of the accompanying illuminations being enclosed in brackets:—1. Calendar (emblems or scenes suited to each month). 2. Four lessons from the Gospels (the four evangelists or their emblems), followed by some preliminary prayers. 3. The Hours proper, that is to say, the order of the service for each of the Canonical Hours, each consisting essentially of preparation, hymn, psalms, lections, hymn, canticle, prayers, but subject to special lengthening and shortening. The Hours are Matins, *ad Matutinas* (Annunciation); Lauds, *ad Laudes* (Visitation of Elizabeth); Prime, *ad Primam* (the Nativity); Tierce, *ad Tertiam* (Angels appearing to the Shepherds); Sext, *ad Sextam* (the Magi); None, *ad Nonam* (Presentation in Temple); Vespers, *ad Vesperas* (Flight into Egypt); and Compline, *ad Completorium* (Coronation or Assumption of

the Virgin). The Psalms and more usual prayers, hymns, versicles, etc., are usually only indicated by their first few words. 4. The Penitential part, consisting of the seven Penitential Psalms (David praying, or David and Bathsheba) and a Litany with prayers. 5. The Office for the Dead, or strictly the choir-service part of the Office, the actual Mass being in the Missal. This choir-service consisted of special vespers and matins, called respectively, from the first words of the antiphons to the first Psalm, 'Placebo' and 'Dirige' (funeral, day of judgment, etc.). 6. Private and miscellaneous prayers. This is the simplest analysis and the commonest order of a Book of Hours, which corresponds to the Offices for Morning and Evening Prayer in the Church of England. Sometimes other Hours are found inserted after the fourth part, such as Hours of the Holy Cross, *Horæ Sanctæ Crucis* (with illuminations of the Crucifixion); Hours of the Holy Spirit, *Horæ de Sancto Spiritu* (Pentecost); but in these cases the barest skeleton is given, showing just the parts in which such Hours differ from the precedent Hours of the Virgin."

Most of the smaller *Horæ* written for private persons contain only a part of the matter enumerated above.

The manuscript consists of 89 folios, 85 leaves of vellum and 4 paper flyleaves, measuring $7\frac{1}{2}$ inches in height by $5\frac{1}{2}$ inches in breadth, and is bound in a sixteenth-century binding of black velvet, in fair preservation, with two silver clasps bearing the initials R. D.—Renée Dupuy. Two of the vellum leaves are missing. The collation is as follows:—Calendar in one gathering of 6 folios, the rest in gatherings of 8 ff.: a^8 , b^7 (wants 8), c^8 , d^7 (wants 4), e^8 , f^4 , g^7 (wants 1), $h-k^8$, l^6 .

On the second flyleaf. f. 2^r, is written *Japartiens a Renée Dupuy 1590*; also some genealogical notes, in a hand of the seventeenth century, relating to the family of Dupuy. Inside the front board is written, apparently at the same time as these notes: *Voyla mon nom Margaritta Dupuy*.

The contents of the manuscript are as follows:—

1. The Calendar, written in French, in blue, red, and gold. The names of the Saints indicate a connection with Rouen and Northern France, and the Calendar generally resembles that of another *Horæ* in the Library, MS. 18.7.12.

2. The Lessons from the Gospels.

3. The two prayers to the Virgin, *Obsecro te* and *O intemerata*.

4. Hours of Roman Use, namely, Matins of the Virgin, Matins of the Cross, Matins of the Holy Spirit, Prime, Tierce, Sext, None, Vespers, and Compline.

5. Penitential Psalms and Litany.

6. Office of the Dead.

7. Memorials of Saints, preceded by the *Stabat Mater*. The Saints commemorated are St Michael the Archangel, St John the Baptist, St John the Evangelist, SS. Peter and Paul, Stephen, Lawrence, Sebastian, Nicholas, Anne, Mary Magdalene, Katherine, Margaret, Barbara, and Apollonia.

The text is written throughout in black, in a beautifully clear hand, with numerous initials in gold and colour. The larger initials are all blue, with white tracery, set in square blocks of red, with gold tracery. The small initials are gold, set in blocks of alternate blue and red. Every page has an outer border of fruit and flowers, strawberries, bunches of grapes, roses, marigolds, daisies, and other flowers, arranged in decorative patterns with conventional foliage, in the characteristic Flemish manner of the period.

The main interest of the book, however, consists in the ten beautiful miniatures with which it is adorned. These, which represent various sacred subjects, are exceptionally fine in their jewel-like brilliancy of colour. The colours chiefly used are blue, lake, and gold. A very pure and intense blue is largely used in all the pictures, as well as in marginal ornaments of the book. It may be noted that this was one of the books examined by Principal A. P. Laurie when collecting materials for his book, *The Pigments and Mediums of the Old Masters* (London, 1914). He says with regard to it (p. 107) that the pigments are typical late fifteenth-century pigments, consisting of fine fifteenth-century azurite, a mixed green which is fifteenth-century verdigris, and a very fine lake, and glazings of lake over vermilion. Azurite, blue carbonate of copper, is a well-known pigment which was used by illuminators from the thirteenth century onwards. Professor Laurie has pointed out that an exceptionally brilliant variety of this pigment, supposed to have come from Hungary, came into use late in the fifteenth century, and remained in use during the following century. This is the pigment used in our MS., and it may be noted in passing that of the numerous MSS., both British and Continental, examined by Principal Laurie, the earliest in which this fine pigment appears is the Culross Psalter, a Scottish MS. of 1470, also in the Advocates' Library (MS. 18.8.11).

The first of the annexed illustrations (fig. 1) shows an opening of the book, and gives an idea of its general appearance. On the left is the last page of the Calendar, written in red, blue, and gold, with a floral margin. On the right is the first page of the Gospel Lessons, with a beautiful miniature of St John in Patmos, writing. He wears

an undergarment of blue and gold, with an outer robe of crimson lake. On his right hand is the eagle, in gold. There is a background of sea and mountains, all in delicate shades of blue, touched with gold. The page is surrounded by a floral margin, and under the picture appear the opening words of St John's Gospel, *In principio erat verbum*.

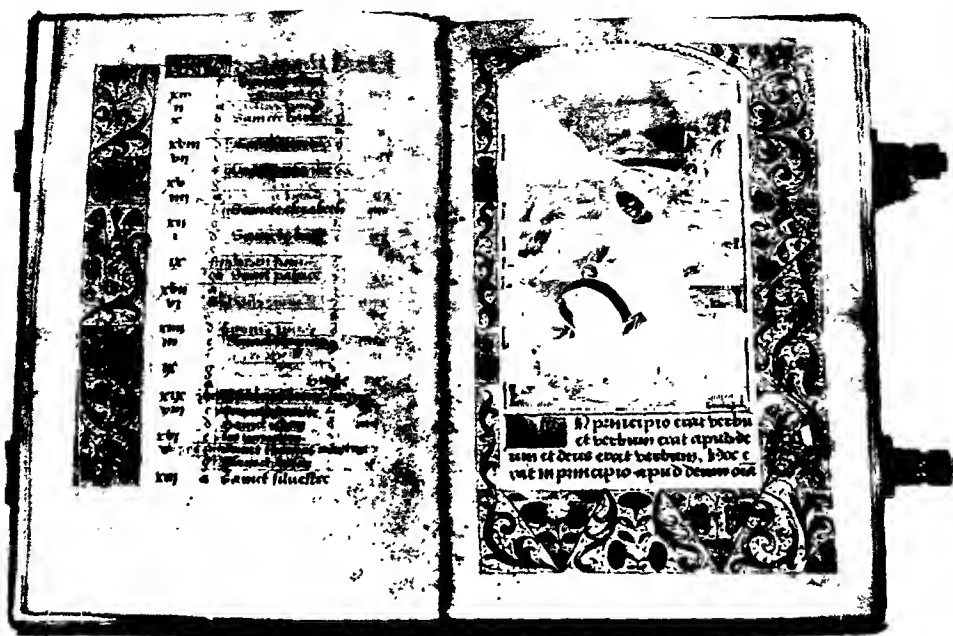


Fig. 1. Dupuy Horæ. St John.

The next illustration (fig. 2) is a page of text taken from the prayer *Obsecro te domina*. A page with no illuminated initials has been selected, to illustrate the decorative quality of the plain text with its margin.

The miniature on the first page of the Matins of the Virgin (not figured) represents the Annunciation. The Virgin, in a robe of blue and undergarment of gold, kneels under a crimson canopy, before a table draped in green, on which lies an open book. Facing her is the Archangel Gabriel in a robe of lake and gold, with white undergarment, and white and green wings. He holds in his hand a golden

rod surmounted by a lily. The Dove descends in a golden ray. Below are the opening words of the office, *Domine labia mea aperies*.

Fig. 3 is the beginning of the Matins of the Cross, a miniature of

stis meis et in omnibus angu-
stis et necessitatibus meis.
Et in omnibus illis rebus in
quibus ego sum factururus locu-
turus aut cogitatururus omnibus
diebus ac noctibus atque mome-
tis vite mee. Et michi famulo
tuo impetres a dilecto filio tuo
complementum cum omni mi-
sericordia et consolatione omni
consilio omni adiutorio omni
benedictione et sanctificatione
omni saluatione pace et pros-
peritate omni gaudio et alacri-
tate etiam abundantiam omni
honorum spiritualium et corpo-
ralium. Et gratiam sancti spi-
ritus qui me bene per omnia di-
sponat animam meam custo-
diat corpus meum regat et pro-
tegat mentes erigat mores com-
ponat actus probet vota et desi-
deria mea perficiat cogitationes
sanctas instituat preferita



Fig. 2. Dupuy Hours. Page of Text.

the Crucifixion. On the left are the Virgin and St John, on the right a Jew and a group of Roman soldiers, in the background the city of Jerusalem—again a fine harmony in blue.

At the beginning of the Matins of the Holy Spirit is a miniature

(not figured) representing the Descent of the Spirit. The Virgin and Apostles are grouped in a panelled chamber, similar to that which



Fig. 3. Dupuy Horæ. The Crucifixion.

forms the background of the Annunciation picture. The Spirit descends in the form of a dove.

Fig. 4 is the beginning of Prime, with a miniature of the Nativity. The Virgin kneels adoring the Child. Opposite her kneels St Joseph,

and from behind the ox and the ass gaze upon the Child. The office begins *Deus in adiutorium meum intende.*



Fig. 4. Dupuy Hours. The Nativity.

Fig. 5 is the beginning of Sext, with a miniature of the Flight into Egypt. This is perhaps the most beautiful in colour of all the miniatures. The Virgin in a robe of blue and gold is seated on the ass, holding the Child, who wears a dress of crimson lake, touched with

gold. St Joseph walks beside the ass. In the distant background of blue is a city set on a hill against a delicate evening sky.



Fig. 5. Dupuy Horæ. The Flight into Egypt.

The remaining miniatures are not figured. At the beginning of None is a miniature of the Presentation in the Temple.

At the beginning of Vespers is a miniature of the Adoration of the Magi. The figures are gorgeous in blue, crimson, and gold. The scene

is the same as that in the picture of the Nativity. Over the roof of the stable appears the Star of Bethlehem.

At the beginning of Compline is a miniature of the Coronation of the Virgin. Mary, robed in blue and gold, kneels before the Father, robed in crimson and seated on a golden throne, and is crowned by two angels.

The last miniature, at the beginning of the Office of the Dead, represents Job and his friends.

The opening pages of the Office of Tierce and of the Penitential Psalms, both of which doubtless contained miniatures, are unfortunately missing, but the book as it stands is a beautiful little gallery of the great period of Flemish religious art. Apart from the loss of the two leaves mentioned, it is in good preservation.

III.

AN ACCOUNT OF A FIND OF ORNAMENTS OF THE VIKING TIME FROM VALTOS. UIG, IN THE ISLAND OF LEWIS. BY D. J. MACLEOD, INSPECTOR OF SCHOOLS. WITH A DETAILED DESCRIPTION OF THE OBJECTS BY W. J. GIBSON, OF THE NICHOLSON INSTITUTE, STORNOWAY; AND A NOTE UPON THE FIND BY JAMES CURLE, F.S.A.SCOT.

Mr MacLeod communicated his discovery in the following report forwarded to our Fellow, Mr George Macdonald, C.B., to whom we are indebted for bringing it to the notice of the Society:—

On the 26th of April 1915 I inspected Valtos School, and during the course of the visit the headmaster, Mr Roderick Morrison, drew my attention to certain articles of brass and bronze which some of the school children had unearthed from a small sand mound in the neighbourhood during the current week.

Mr Morrison had thoughtfully collected and retained the articles for identification. They consist of the following:—

1. Two large, hollow, embossed brass brooches, evidently of early Scandinavian type.
2. One large circular bronze ornament, cast in one piece, with artistic Celtic designs; also broken pieces of bronze which fit into the back.
3. One Celtic penannular brooch of bronze (or silvered bronze), with portion of tongue.

4. Bronze buckle, ornamented with Celtic design work.

5. Portion of bronze chain, with links of simple but interesting pattern.

6. One bead of amber.

Along with the articles and in close juxtaposition to them were found the roof of a skull and other human bones. These were again buried.

During the afternoon I paid a visit with a teacher to the place where the bones and articles were discovered. We proceeded for about 150 yards due west of the school, along green hummocky ground, until we came upon a patch of very dry sandy soil in which potatoes are usually raised by the crofter to whom it belongs.

On account of the regular cultivation of this particular area, the soil has gradually become very loose and the sand is easily blown away by the wind. On this account the cultivated area has gradually sunk below the level of the surface of the surrounding ground, so causing to be formed an enclosing face of sandy earth, varying in perpendicular height from a few inches to 3 feet. In the northern and higher portion of the enclosing face of sand a bone was noticed sticking out by one of the boys during the play hour, and further investigation yielded the above articles. They lay with the skull and bones at a depth of 18 inches to 2 feet beneath the original surface.

During my visit to the place I found lying about what was evidently an old rusted iron knife about 12 inches long, with portion of a hollow iron handle and broken blade. There were also amorphous pieces of iron pierced with small square holes, lined with what appeared to be thin plates of bronze.

It may be of interest to mention that in fairly close proximity to the grave, and in a beautiful green sward close by the edge of the sea, is a mound locally known in Gaelic as "An Caisteal" ("The Castle"), but old men of eighty or ninety whom I conversed with, and who have lived in the neighbourhood all their lives, remember it only as it now is—a slight green hummock. The outline of the structure cannot now be traced on the surface, and there is no mention of it on the 1-inch or 6-inch O.S. maps. There is a well of excellent water called "Tobar a Chaisteil" ("The Castle Well") close by. A special portion of the large sandy beach goes by the name of "Traigh Bhorgaidh." "Traigh" is the ordinary Gaelic word for "beach," and "Bhorgaidh" is the genitive of the Gaelic equivalent of the Norse "borg" ("fort"). The phrase therefore means "the beach of the fort." This appears to confirm the surmise that the grave may be that of a Viking,

possibly some Norse warrior who at one time had his abode in "An Caisteal."

The topography, personal names, and language of West Uig, Lewis, all disclose Norse elements to a very marked extent.

D. J. MACLEOD.

Mr MacLeod having acquired the find, presented it to the Nicholson Institute, Stornoway. The detailed description of the objects which follows is by Mr W. J. Gibson, who is in charge of that Institution:—

Pair of single-scaled brass oval brooches of Scandinavian type (fig. 1, Nos. 1 and 2), each 4·25 inches long, 2·55 inches broad, and ·9 inch high. Both have been cast from the same mould. The surface is, as usual, divided into sunk panels, in this case eight, decorated in relief with highly conventionalised animal forms. The two top panels are diamond-shaped, and the union of the two contiguous points is formed into a small circular sunk panel which is the centre of the brooch. In the centre of each of these panels is a diamond-shaped boss. The ridge separating the panels has raised edges, and the channel between these is convex in section. Each of the six free points of the diamonds is expanded into a small circular panel similar to that at the centre of the brooch. Each circular panel shows a hole through which passed a copper pin by which was affixed a raised boss of some more easily corroded metal or other destructible material. These have disappeared, but traces of a white metal may be seen on several of the panels. Some of the copper pins are still in position.

The ridges of the two middle panels are continued by "thistle-head" ornaments, partly made up of the round panels, to the margin. The wedge-shaped part of the "thistle-head" is decorated with a key pattern.

Similar "thistle-head" ornaments are placed in the middle of the lower half of the two larger side panels, but the surface of the circular part of these, unlike that of the other seven, is flush.

The edge of the brooch has two mouldings, the outer entire, the inner interrupted by the ends of the "thistle-head" ornaments.

The fastening-pins of the brooches were of iron. The method of attachment is well seen on one of the brooches: the head was secured on a horizontal rivet supported on parallel vertical flanges which form part of the casting; a similar looped-over single projection of the casting confined the point.

On the inner surface of both brooches may be seen the imprint of the texture of the cloth employed in forming the moulds from which they were cast.

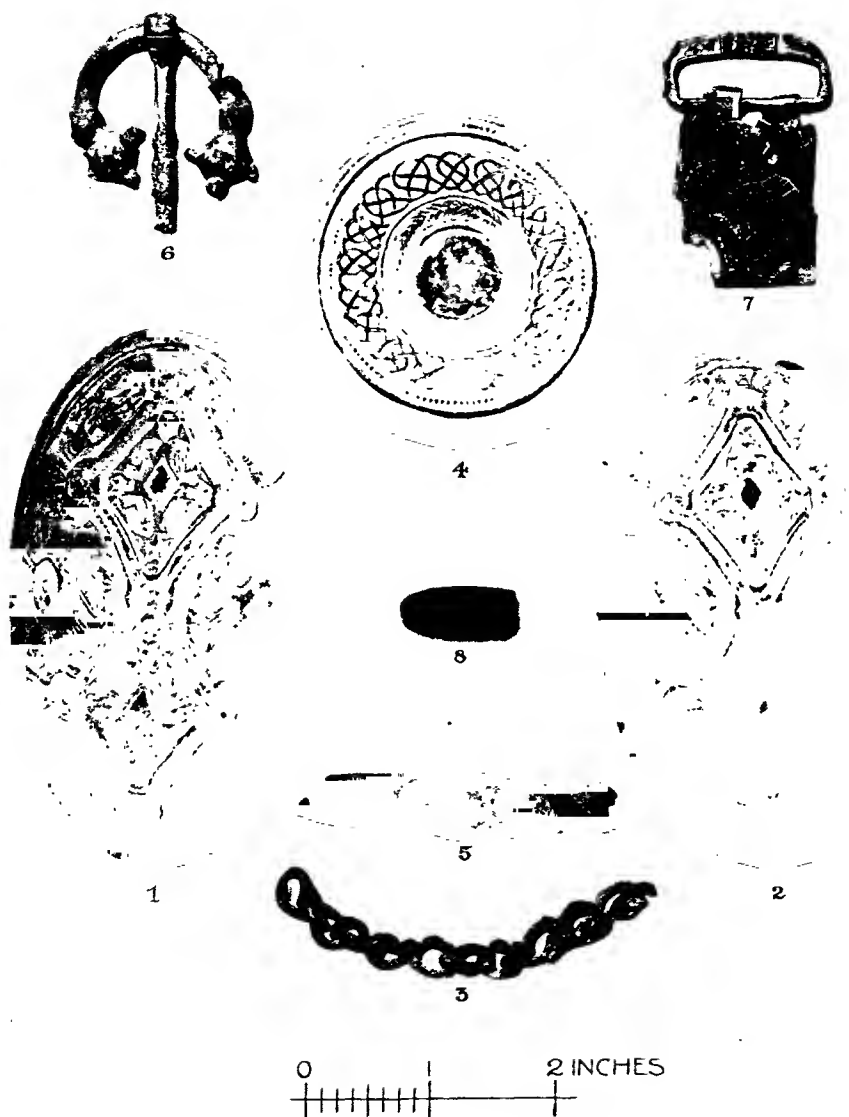


Fig. 1. Ornaments of Viking Time from Valtos, Uig, Island of Lewis.

The pattern of these brooches seems identical with that on the Pierowall specimen figured in Mr Curle's paper on "Scandinavian Grave-finds from the Island of Oronsay, and from Reay, Caithness" (*Proceedings*, vol. xlviii. p. 310, fig. 20).

No. 3. Eleven links of a brass chain, probably the connecting chain of the oval brooches. Each link is $\cdot 4 \times \cdot 3$ inch.

No. 4. Circular ornament of bronze of 2·7 inches diameter. On a raised centre was carried a central boss, $\cdot 7$ inch diameter, probably hemispherical, of a different metal, now corroded away. This boss was fixed by an iron tang to the base of the cup-like depression, which supported it. The raised centre is surrounded by a feather pattern, bounded inwards by a double-lined border and outwards by a raised moulding. Outside this is an interlaced pattern of three endless cords, each strand divided into two by an incised single line running up the middle. On the feathered and interlaced part of the pattern a graver may have been used.

The interlaced part is surrounded by a low beaded moulding and two raised plain mouldings, followed by a second beaded moulding, and this by a plain one which forms the top of the bevelled edge.

The edge is $\cdot 2$ inch thick, and is decorated with a double incised line forming a bar-chevron border.

The surface of the back is concave.

No. 5. A bronze strap, tapering from a width of $\cdot 5$ inch in the middle to $\cdot 4$ inch at ends.

This strap evidently belongs to No. 4, and has been originally riveted at the ends to its back surface, where one of the copper rivets is still in position. The cross pin or other fastening which has joined the ends has been broken off and is missing.

No. 6. Penannular brooch of bronze of Celtic type, plated.

The head is 1·4 inch in diameter, each end showing double hemispherical expansions, the larger $\cdot 4$ inch diameter, decorated with two lateral and one terminal knob.

The pin, of which part remains, is flattened; width $\cdot 15$ inch, thickness $\cdot 1$ inch. Its head is flattened to a width of $\cdot 25$ inch, decorated front and back by two parallel transverse notches, with a longitudinal one connecting these round the loop.

No. 7. Buckle and belt-mounting of bronze, plated.

The buckle is $1\cdot 4 \times \cdot 6$ inch. The tongue is missing; the bar to which it was attached gives indication of considerable wear. The broad part of the buckle is decorated by incised lines, and by two small raised oblong panels which form the sides of the tongue-grooves. These panels have sunk centres.

The belt-mounting is plated and formed by folding, an oblong notch having been cut in the folding to take the head of the tongue. The back is plain; the front decorated with an incised pattern showing two interlaced spirals, the interlaced band being divided lengthwise by a line of dots along the middle. The background is cross-hatched in triangles. There seem to have been holes at each of the outer corners (the back shows one of these) by which the mounting was fastened to the leather or woven fabric of the belt.

No. 8. A fusiform bead of amber, slightly imperfect; originally 1 inch long, $\frac{1}{4} \times \frac{3}{8}$ inch thick, perforated longitudinally by a drilled hole $\frac{1}{15}$ inch in diameter.

Lastly, remains of an iron implement, possibly a knife and portions of a socketed spearhead, found on the sand near the grave.

W. J. GIBSON.

The group of objects thus described belongs to one of those rare finds in which Scandinavian and Celtic influences are mingled. The oval brooches (fig. 1, Nos. 1 and 2) were probably made in Norway or Sweden. They belong to the single-scaled variety, which was certainly one of the earliest types of such brooches to reach our shores. In the paper to which Mr Gibson refers, I have termed it the Pierowall type, from the site of the Viking cemetery at Pierowall in Orkney, where a pair of these brooches was found with a Celtic penannular brooch, another example of the association of Scandinavian and Celtic relics. Altogether the Pierowall graves produced three pairs of single-scaled brooches; it is probable that all of them were of the same pattern. In my former paper I mentioned a pair of the same type from Newton, Islay, and a single example from Unst, Shetland. With these we can now associate the Valtos brooches, and I may add five pairs found in Ireland. Four of these come from the very fine collection of Viking relics found at Island-Bridge and Kilmainham near Dublin, now in the collection of the Royal Irish Academy there, and one pair found at Ballyholme, County Down. The brass chain was very possibly used for connecting the two brooches together.

In addition to the oval brooches, we have the remarkable circular ornament (No. 4). Mr Gibson describes it as being at the back smoothed to an accurate concave. The bronze band (fig. 1, No. 5) appears to have been fixed to the back, secured at either end by rivets, one of which is still in position. There does not appear to be any trace of a pin or other fastening which would enable us to identify the object as a brooch. It is quite common among the ornaments in a Scandinavian grave to find a pair of brooches identical

in design associated with a third entirely different in pattern, which was doubtless worn between them. We have an example of this in the trefoil-shaped brooch found at Clibberswick, Shetland, with oval brooches. The absence of any pin, however, indicates that the object in question was not intended for use as a brooch. The bronze band at the back suggests that it was so placed to allow of the disc being put upon a strap, and that it was probably used as a belt mounting. Its general character impresses one as Celtic. The decoration of looped cords is to be seen on much of the Celtic metal-work of the time. We have an admirable example of this treatment on the penannular brooch from Pierowall already referred to. The ornament which surrounds the central boss, probably originally of amber, though more irregular in execution, recalls the treatment of the terminals of the silver penannular brooch from Croy, Inverness-shire—a purely Celtic ornament which was found in association with coins of Coenwulf, King of Mercia, 785-818 A.D. Lastly, while the object cannot be identified from its form as belonging to any well-known group of Celtic personal ornaments, and though, no doubt, it is somewhat coarser in execution, it presents in form and treatment a close analogy to the circular medallions to be seen on such Celtic work as the Lough Erne Shrine and the Monymusk Reliquary.

On the other hand, in endeavouring to trace the provenance of an object which, as far as I know, is unique among our Scottish finds, it is well to keep in view that somewhat similar interlaced work occurs in a good many finds in Norway. In some of these it occurs on ornaments clearly imported from Ireland, but it is also to be seen occasionally on purely Scandinavian forms.

To Celtic influence also I should ascribe the small penannular brooch or pin (No. 6). Its bulbous ends with raised points were probably animal heads at an earlier stage of its development, with projecting snouts and staring eyes, just as we may see them on a brooch such as Mr Coffey has illustrated in his *Guide to the Celtic Antiquities in the Dublin Museum*—one of a group dated as not later than about 700 A.D. But although the type may derive its ancestry from Ireland, it is quite possible that it was fashioned by some metal-worker of the Western Isles; for the excavation of the Mote of Mark, Kirkcudbrightshire, has furnished us with the moulds from which a native craftsman produced a variety of ornaments rich in interlaced work, and among them simple penannular-headed pins or brooches with lozenge-shaped terminals, not very far removed from this Valtos pin.

I have already mentioned the find from Island-Bridge and Kil-

mainhain near Dublin. This constitutes one of the most interesting groups of Scandinavian antiquities in Britain; for not only does it contain the oval-shaped brooches referred to, but a magnificent series of swords, with other weapons of the Viking age, a number of tools, and the characteristic sets of scales, with their weights, which indicate that some of the Northern people who lay buried there had come as traders. Among the objects gathered together from these sites, unfortunately in a somewhat haphazard fashion, I would particularly note a bronze buckle,¹ coated with white metal about $3\frac{1}{2}$ inches in length. The portion of the buckle into which the strap was inserted formed a rectangular panel, now in part destroyed, about $2\frac{1}{4}$ inches \times $1\frac{1}{3}$ inch, which is filled with a key pattern. The buckle

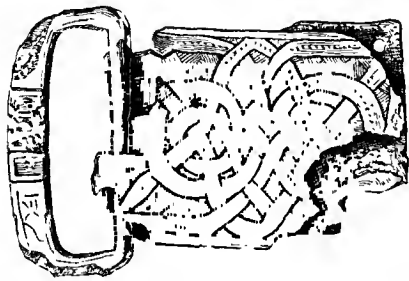


Fig. 2. Plated Buckle and Belt-mounting of Bronze, from Valtos, Uig.

stands out among the Island-Bridge finds as an object of Irish design, entirely distinct in character from the imported Scandinavian relics. Its key pattern is to be found in several of our early manuscripts, such as the Book of Kells, or the Lindisfarne Gospels, while on the stone monuments we have it exactly reproduced on one of the panels of an early cross shaft from St Andrews. The small buckle in the Valtos find (fig. 1, No. 7, and fig. 2) bears no characteristic trace of Scandinavian origin:

on the other hand, its double interlaced knot-work is typical of the Celtic manuscripts of the best period, and is to be seen in the border of one of the pages of the Book of Durrow.

The other objects of the find—a single fusiform bead of amber (fig. 1, No. 8), and the remains of an iron knife and socketed spearhead—do not call for any special comment. It is unfortunate that in none of the Scottish—nor, I believe, Irish—finds does the Pierowall type of Viking brooch occur with coins to enable us to date it; but we know that in Scandinavia it is held to belong to the beginning of the ninth century. We must remember, however, that such ornaments were often placed in the grave after they had seen a good deal of service. We recently had before us an example from Reay, Caithness, of one of these brooches with its worn edge patched with silver; and from a personal examination of one of the Valtos brooches, No. 2, which

¹ *Proceedings of the Royal Irish Academy*, vol. xxviii., Section C, No. 5, "Scandinavian Objects found at Island-Bridge and Kilmainham," by George Coffey and E. C. R. Armstrong, p. 121, fig. 22.

Mr Gibson has been good enough to send me for inspection, I have no doubt that it had been in use for a considerable time; the break in the margin, which is clearly shown in the illustration, is probably the result of the movement of the metal chain, and the whole edge is polished through wear.

The end of the eighth century saw the first attacks of the Vikings on the coast of England. By the beginning of the ninth century they had harried Iona and made their presence felt in Ireland. As the century went on the numbers coming westward increased rapidly. By the middle of the century they were widely settled in Caithness, the Orkneys, and the Hebrides; and where, as at Valtos, at Pierowall, or at Oronsay, we find a Scandinavian grave in which typical brooches from the North are associated with Celtic ornaments, we may hazard the conclusion that it belongs not to the first period of piratical onslaught but rather to the beginning of more settled colonisation. In the whole circumstances, I should feel inclined to date the Valtos burial as not earlier than the middle of the ninth century.

MONDAY, 13th March 1916.

The HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

A Ballot having been taken, the following were duly elected Fellows:—

WILLIAM BLACK, of Chapel. Kingskettle, Fife.
Mrs MARY GLADYS LLOYD GARLE, Lamb Building, Temple, London.
EDWARD RODGER, 1 Clairmont Gardens, Glasgow.
SPEIRS PATON SINCLAIR, 25 Grosvenor Street.

The following Donations were intimated, and thanks voted to the Donors:—

(1) By JOHN WATSON, F.S.A. Scot.—

Plans of the Brochs of Glenelg made by Sir Henry Dryden in 1866.

(2) By HIS MAJESTY'S GOVERNMENT—

Register of the Privy Council of Scotland. Edited and abridged by P. Hume Brown, M.A., LL.D., etc. Third series, Vol. viii. 1683-1684. Edinburgh, 1915.

Calendar of State Papers, Spanish. Vol. xi. Edward VI. and Mary. 1553. Edited by Royall Tyler. London, 1916.

(3) By THE PRESIDENT AND COUNCIL, OF THE SOCIETY OF ANTI-
QUARIES OF LONDON—

Reports of the Research Committee—

No. I. Excavations on the Site of the Roman Town at Wroxeter, Shropshire, in 1912. By J. P. Bushe-Fox, Esq. London, 1913. 8vo.

No. II. Second Report on the Site of the Roman Town at Wroxeter, Shropshire, in 1913. London, 1914. 8vo.

No. III. Excavations at Hengistbury Head, Hampshire, in 1911-12. London, 1915. 8vo.

The following Communications were read:—

I.

ANCIENT ARTILLERY. WITH SOME NOTES ON MONS MEG.

BY SIR JAMES BALFOUR PAUL, C.V.O., LL.D., F.S.A.Scot.

Artillery in the widest sense of the word—that is, offensive projectiles—is coeval with the beginnings of man: the first being who picked up a stone and threw it with hostile intent at some bird, beast, or enemy was using artillery. Gradually he came to desire greater force and precision for his missiles, and invented bows and arrows, chipping flint heads for the latter, as we very well know. The sling was also an early piece of artillery, and was employed in its primitive form long after the Stone Age, witness the celebrated combat of David and Goliath. Later the sling was developed into a very formidable weapon in the shape of the *catapultæ* and *balistæ* of the Romans—the former throwing darts, and the latter large stones, weighing, it is said, sometimes as much as three hundredweight. We are ignorant of their precise appearance, but there is little doubt that the French *trébuchet*, used in early medieval times and down to the middle of the fifteenth century, was a lineal descendant of the balista. It was a kind of sling, consisting of a long beam turning on a horizontal axis borne on its mounting. At one end was a counterweight, and at the other a pouch made of strong netting or leather in which were placed heavy stones sometimes armed with an incendiary match. They were quite formidable weapons for the time; but as they had to be firmly fixed in the ground, their range was limited and could not easily be altered, so that once the range was known the enemy could take measures to counteract their worst effects.

But artillery in the modern acceptation of the word was not possible till after the invention of gunpowder. Now, it is usually stated that gunpowder was known to the Chinese centuries before the Christian era; but the latest authorities are of opinion that this idea is without foundation. No doubt the Chinese manufactured incendiary compositions which burned fiercely and were hard to put out; they also knew how to make liquid fire, stink-pots, and other abominations which the Germans are using at the present day; but not gunpowder. They had, in short, no knowledge of what we call explosives.

Gunpowder, indeed, could not have been invented before the discovery of the art of refining saltpetre. This is believed to have been found out, according to Colonel Hime, the latest writer on the subject,¹ by Roger

¹ See Hime's *Origin of Artillery* (London, 1915), a work to which the present writer is indebted for much of the information contained in the early part of this paper.

Bacon in the middle of the thirteenth century. Its explosive property when mixed with sulphur and charcoal was probably discovered accidentally. Bacon did not publish his discovery to the world at large, for reasons which need not be entered on here, but wrapped it up in a maze of cryptic writings only to be understood by alchemical adepts like himself. But the practical application of gunpowder as an explosive force capable of expelling a projectile from some chamber or receptacle did not take place till long after the discovery of the substance itself. It is not till the year 1313 that we catch the first glimpse of the rudimentary gun. In a memorandum book of that date belonging to the city of Ghent there is

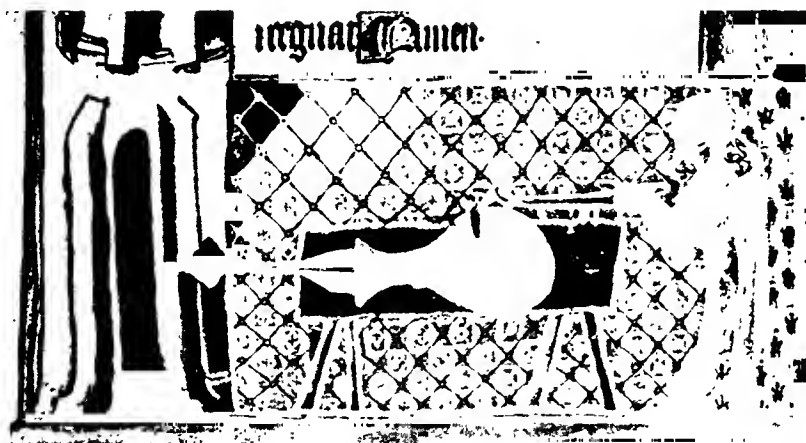


Fig. 1. Ancient Gun, illustrated in a MS. (A.D. 1327). (Reproduced by kind permission of the authorities of Christ Church, Oxford.)

an entry to the effect that "bussen" were first discovered in Germany by a monk, and in the following year it is noted that bussen and gunpowder (or "kruyt," as it is called) were exported to England. Bussen were originally a kind of hand grenade, and had long been known, so that nobody could possibly have said that they were first discovered in 1313. The word is therefore evidently used in a new sense, and is believed to mean a kind of gun. Be that as it may, fourteen years after this we have an actual picture of a gun (fig. 1). It occurs in a MS. in the library of Christ Church, Oxford, of date 1327. Whether it represents the gun sent to England in 1314 we know not, but it is archaic enough in all conscience. Imagine a large vase—a fat pot-bellied vase (indeed, the Italians called the early guns *vasi*)—laid on its side. In its neck is fitted the projectile, consisting of a kind of magnified cross-bow quarrel or dart armed with a

four-sided iron head and metal—probably brass—feathers. A tampion or stopper must have been fitted between the butt end of the projectile and the charge of powder, as otherwise the arrow would only have gone a few yards. It was fired from a touch-hole on the upper side of the vase, and we see the gunner applying his match.

Flanders became the seat of the new industry of gun manufacture. The vase-shaped guns were soon improved upon. Small tubes of iron were next made throwing leaden projectiles: they were used in groups, but they evidently did not prove very satisfactory, and the gunmakers then went to the other extreme and began to manufacture huge pieces of ordnance called bombards. These were made of longitudinal bars of forged iron arranged like the staves of a cask, welded together and held in position by external hoops of wrought iron driven or shrunk on. Mons Meg is a good specimen of this kind of gun.

These bombards—or at least the smaller sizes of them—were for the most part breechloaders; that is, the barrel or chase of the gun was open at both ends, the powder and projectile being put in a separate chamber open in front, adjusted to the butt end of the chase and joined to it by iron wedges driven into an external case which enclosed the whole of the breech end of the gun. At first these bombards were simply laid on the ground on beams of wood and fired there. But the early gunners had to contend against several formidable disadvantages. In the first place, their gunpowder was of very poor quality, igniting with comparative slowness and fouling the gun terribly. It required, too, very careful ramming home: if it was rammed too loose it lost much of its expulsive power, and if too tight it did not explode at all, but silently fizzled away, and in any case a large volume of gas escaped through the touch-holes. When, about 1419, corned powder was invented, the quality was much improved, but for long its use was confined to small pieces, as the large ones were not able to withstand the shock and were liable to burst.

In the second place, the early gunners were much handicapped by their total want of knowledge of recoil. In modern artillery this is overcome by the gun more or less yielding to it, or by other and more scientific methods into which it is unnecessary to enter. But in the old days all that could be done was to make the guns overcome the shock by resisting it. So they were banked up with planking and wedges and made immovable. This, of course, imposed a tremendous strain on the guns, and they burst so frequently that they were almost as great a source of danger to their own gunners as to the enemy. The method of firing increased this danger. At first the gunner approached the touch-hole with a red-hot wire, and he was not infrequently blown to bits. Then, to obviate this melancholy occurrence, a train of slow-burning powder

was laid along the top of the gun. This being ignited at the end furthest from the touch-hole, the gunners took cover, and after the explosion they came out of hiding and, if the gun were still there, proceeded to the laborious task of cleaning it and loading it with a new charge.

A third disadvantage which the early artillery possessed was the want of change of elevation and range. But efforts were made at quite an early period to overcome this. At the beginning of the fifteenth century the gun was laid on a cradle of wood, which in its turn was supported by

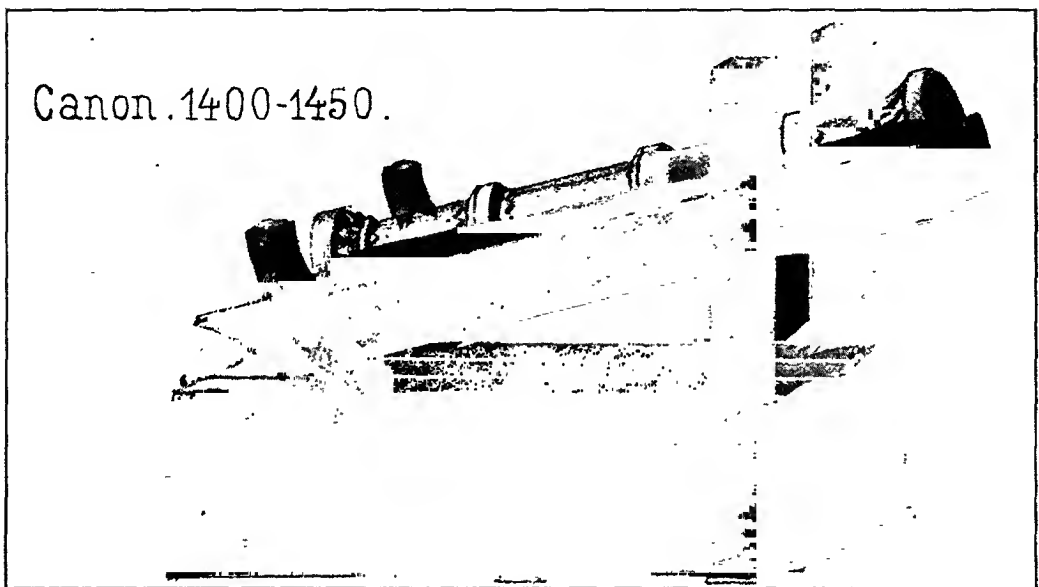


Fig. 2.

a platform. On this platform were fixed four wooden posts, the two in front being perpendicular and the two behind slightly curved. In these posts holes were pierced, and by the insertion of pins the gun could be raised either towards the muzzle or the breech as might be desired, the pins supporting the cradle on which the gun lay (fig. 2). At a later date they managed to give the gun not merely a vertical but a lateral change of range (fig. 3). The gun as before was mounted on a cradle, but the clumsy platform was done away with and its place was taken by a framework, the rear of which rested on the ground, while the front was supported by a trestle. The outside members of the frame widened towards the rear, and were connected by a curved transome in which

slid a third member moving laterally from a bolt in front. To this third member was attached an upright curved batten which enabled the gun to follow the lateral movement of the third member of the frame. The batten was also pierced with holes, and by the insertion of pins into these the elevation could be altered at pleasure.

Even at this time wheeled guns were not unknown. They were used on the Continent in 1376, and twenty years later we find wheels for bombards being made in Scotland. Another invention which much improved the working of guns was that of the trail, a solid block of wood resting on a wooden axletree. The gun in its cradle was placed on bearings on the trail immediately above the axletree. Two vertical



Fig. 3. Cannon, circa 1450. (From Moltzheim's *L'Artillerie Française* (Paris, 1875).)

pieces of wood were then placed near the rear of the trail, and the breech end of the gun, which terminated in a loop, could be moved up and down between these uprights and be fixed at the desired elevation by means of a pin passing through the uprights and the loop of the gun. The latter was secured to its cradle by means of ropes or straps, and so late as 1540 we find in the Treasurer's Accounts sums of money paid for tar to the ropes which thus bound the guns.

These methods, however, of securing elevation were but primitive and clumsy expedients. A great advance was made about the middle of the fifteenth century by the introduction of trunnions, those cylindrical projections which appear on a gun nearly half way up its length between what are technically called the reinforce and the chase. Their introduction did away with the clumsy wooden cradle, the gun carriage being now formed of two strong cheeks or sides of wood. These were secured to the

axletree, and upon them trunnion bearings were cut, the trunnions being secured in position by iron cap-squares. Elevation was obtained by the simple means of putting one or more wedges below the breech, supported by a transome.

These trunnions, placed as they were at the point where the gun received the whole force of the shock and transmitted it to the trail, overcame to a considerable extent the disadvantages of the recoil, and completely did away with the absurd system of banking up the gun from behind.

When a gun was required to travel, the trail was supported by what were called limbers. The word occurs in connection with artillery in Scotland as early as 1517, but we must not suppose that it means the



Fig. 4. Limonières supporting a Gun for travel. (From Moltzheim's *L'Artillerie Française* (Paris, 1875).)

same thing as it does now. What we understand by a limber is a couple of wheels and an axletree which supports the end of the trail of the gun. But limbers of this sort were not used in France till the reign of Louis XIV., so it is unlikely that they were used here before that time. The word is more likely equivalent to "limonières," or shafts which were attached to each side of the trail, and between which a horse was put, who thus supported the end of the trail and raised it from the ground (fig. 4). When ready for travelling, all the loose gear belonging to the gun, consisting of a shovel with which the loose powder was taken from the barrel (cartridges or shells not having yet been invented), a rod with a rammer at one end and a mop or sponge at the other, a wedge for altering the elevation, and a long rope for the purpose of assisting the horses to draw it, or to haul on as a brake when going downhill, were strapped to the gun.

The sixteenth century, too, saw guns cast in bronze come into general use. They had actually been manufactured so far back as 1444 by Jean Bureau and his brother Gaspard, but it took some time before the true proportions of the metals which should be used in the alloy were discovered. These guns, though at first by no means perfect or free from the risk of bursting, were a great improvement on the forged ones. There is a huge gun cast in Turkey by Mahomet II. in 1468, which is now at Woolwich, having been presented to Queen Victoria by the Sultan Abdul-Aziz. It formed part of the armament of the forts of the Dardanelles in 1866. Its calibre is 25 inches, the chamber is 10 inches in diameter, its length 17 feet; it weighs $18\frac{1}{2}$ tons, and fires a shot of 672 lbs.

The weight and capacity of the different pieces of ordnance varied from time to time. In France, in the middle of the sixteenth century, a cannon threw a ball of about 42 lbs., a great culverin one of rather over 15 lbs., a bastard culverin about 7 lbs., a culverin moyen about 2 lbs., and a falcon about 1 lb. The names of the different varieties were often taken from snakes—thus we have Basilisks, Serpentes, Culverins (from *couleuvre*, a serpent), Dragons, Aspics; and sometimes they were taken from birds, chiefly birds of prey, as Sakers and Emerillons (both a kind of hawk), Falcons, and Pelicans.

Having now glanced at the different kinds of guns in use in the early days of artillery, let us turn our attention to Scottish gunnery. The earliest notice of a gun which I have met with in Scottish records is in the Exchequer Rolls of 1384, where four pounds were paid for “ane instrument callit a gun” for the castle of Edinburgh. At the same time £27 were spent on sulphur, saltpetre, and other things for the munitions of the castles of the King. Guns, however, had been seen in Scotland even before that date. Some small cannon were imported in the reign of Robert II., that is to say, between 1370 and 1390; and between 15th September 1382 and 30th March 1384 the Prior of Drax in Yorkshire had a commission to supply “artillery” and gunpowder for the castles of Berwick and Roxburgh, then in the hands of the English, and he got certain sums of money advanced him for the value of divers “guns” bought by John Phellipote, late citizen of London, for the munition of Roxburgh Castle.

In 1430, Bower tells us, James I. brought from Flanders a huge bombard of brass called the Lion. It may have been by the bursting of this gun that James II. was killed in 1460. In 1436, £590 were paid to Nicholas Plummer to pay workmen in Flanders engaged under his supervision in constructing bombs and other military engines. We hear of “the King’s great bombard” being in Ettrick Forest in 1444;

and eleven years afterwards it took part in the siege of Abercorn Castle, where it was skilfully managed by a French gunner who "schot richt weell and faylit na schot within a faldome quheir it was chargit him to hit."

This brings us to that great piece of Scottish ordnance still in existence which bears the famous name of Mons Meg (fig. 5). The popular and patriotic tradition is that when James II. besieged the rebellious Douglasses in the castle of Threave in Kirkeudbrightshire in the year 1435, the artillery brought having proved ineffective, a local blacksmith

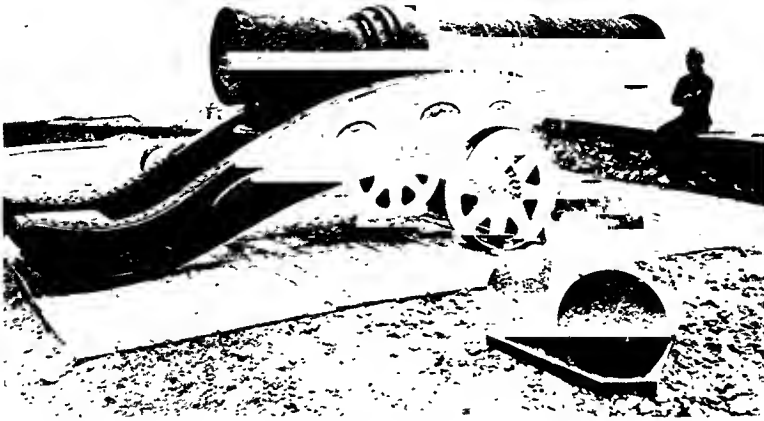


Fig. 5. Mons Meg.

[Photo by Wilson Bros.]

named M'Kim and his sons offered to make then and there a bigger and more powerful gun than any the King had, and produced in a short time this mighty specimen of their skill, the surrounding population contributing each a bar of iron for its manufacture. It is also said that the blacksmith was ultimately rewarded with the forfeited lands of Mollance—whence Mons,—and that he called the gun after the name of his wife. As further proof of this tale it is also stated that only two shots were fired from the cannon before the castle capitulated, that both these bullets have been found, and that they correspond to those still preserved in Edinburgh Castle, which are of Galloway granite from the summit of the Binnan Hill near Carlingwark. The story continues that during the making of a road in the locality the

mound on which the gun was made was uncovered and found to consist of a mass of cinders and the iron debris of a great forge.

There is another mound in the locality which bears the name of Knockcannon, which is said to be the place on which Meg was put in order to fire at the castle; but, as Sir Herbert Maxwell says, this is suspiciously like the usual attempt to explain a name by reference to some familiar or notable incident. Its more likely derivation is from the Celtic *cnoc ceann fhionn*, hill of the white top. Or it may possibly be the hill of St Finnan, whose cult was by no means unknown in Galloway.

The charge of powder required for Meg is traditionally said to have been a peck, and her granite ball to have been equal in weight to a Carsphairn cow. In such fashion do legends take shape.

There is, however, a great deal to discredit this tradition. It is extremely unlikely that a village smith and his sons could have made such a large piece of ordnance with the means at their disposal, as it would really require the appliances of a first-rate forge.

Here are the actual dimensions, taken from an official description of her drawn up in 1734. The length of her chase was 9 feet $2\frac{1}{2}$ inches, of the chamber 3 feet $8\frac{1}{2}$ inches, total length 13 feet 4 inches; diameter of bore 1 foot 8 inches, of chamber 9 inches; the weight of her bullet in iron 1125 lbs., in stone 549 lbs.; her whole weight, 19,452 lbs. or about $8\frac{1}{2}$ tons. It took 105 lbs. of powder to fill her chamber when rammed; her greatest range when at an elevation of 45 degrees was 1408 yards with an iron bullet, and 2867 yards with one of stone; to travel these distances an iron bullet took 16 seconds and a stone one 22; compared with a cannon royal at the same elevation, her force with an iron bullet was as 9 to 1, and with a stone one as 6 to 1.

She is stated in this memorandum to be in all probability the biggest gun ever made in the world, but this is not really the case. "Mad Marjory," a big gun at Ghent forged in 1452 in the same fashion as Mons Meg, was probably bigger, and there were other big guns in Europe: one at the Dardanelles had a bore of 30 inches in diameter. Mons, it is said, "has been all hammered, as appears by her chase, which is composed of long flat iron bars and hoops driven on them, so all forged together. But no joining of hoops is to be seen in her chamber or hind part: therefore it is very probable that that part was first made, then joined to her ribs or bars and the hoops afterwards drove upon these bars, as is more confirmed by the small holes on her base and reinforce rings, being designed for turning her when these parts were joined."

One thing the memorandum proceeds to say is that "in the position she now lies, the horizontal diameter of the muzzle exceeds the perpen-

dicular diameter thereof near half an inch: therefore can be accounted for no other than yielding with her own weight lying so long in one position: for the base ring which is solid there is no sensible variation from a circle."

The memorandum goes on to say, on the authority of a MS. in the Advocates' Library, that the name Meg was given it by James IV. after his wife Margaret Tudor, and further attempts to explain the word Mons; but as all this is absolute nonsense, I need not expatiate further on it.

The first time this great gun appears under the name of Mons is in 1489, when the gunners got 16s. when they "cartit" Mons either to the siege of Duchal Castle or to that of Dumbarton. Quite a lot of money was expended on her when she was taken to the siege of Norham in July 1497. Four great cables weighing 16 stone 5 lbs. were provided for her at a cost of £3, 5s. 8d. Her exit from Edinburgh was made with great pomp, and she was dragged down the High Street with minstrels playing before her and taken to St Leonard's, where she was fitted with a new "cradle" or gun-carriage. She was carefully watched for five nights, and started on her journey south on the last day of July. Her retinue was imposing. One hundred workmen attended her, armed with spades and picks to clear the way, as no doubt it was an arduous undertaking to get such a monster along the primitive roads of the period. She was covered with eight ells of painted canvas, and her wheels were plentifully provided with tallow and tar. Her well-being was also looked after by several specialists, three wrights and two smiths accompanying her in case of any accident. We are not told what motive power was used in her transport,—whether she was pulled along by oxen, as was the usual method, or dragged by the hundred attendant pioneers. We are not even told if she ever got to Norham, which did not at this time fall into James's hands. A singular fact is that John Ramsay, Lord Bothwell, who was at this period acting as a spy in the pay of the King of England, gave in a report of the ordnance he had seen in Edinburgh Castle, but he makes no mention of Mons. The artillery he saw consisted of "two great curtals or short cannon sent from France, ten falcons or light cannon, thirty cast guns of iron with chambers, sixteen close carts or tumbrils for spears, powder, stores, and other stuff for loading guns."

Mons came back to Edinburgh in September, and we do not hear of her again in the Treasurer's Accounts till 1501, when a wooden house was built in the Castle for the accommodation of herself and two sister guns called respectively Messenger and Talbart. It appears that they were all lying ignominiously in the dust, and 3s. 2d. had to be paid for "casting of the erd from Mons and to turn her and lay the twych hole up." The guns too were

given a coating of red lead and linseed oil to preserve them from rust. In 1526 and 1539 we again hear of attention being paid to her in the way of red lead and lubrication. But one of the most curious incidents in her career is the part she took in October 1680, when poor old Meg burst while firing a salute in honour of the Duke of York. She was removed to London in 1754, but restored to the castle of Edinburgh in 1829, where the ancient and interesting relic still remains.

II.

NOTICE OF A JET NECKLACE FOUND IN A CIST IN A BRONZE AGE CEMETERY, DISCOVERED ON BURGIE LODGE FARM, MORAYSHIRE, WITH NOTES ON SCOTTISH PREHISTORIC JET ORNAMENTS. BY J. GRAHAM CALLANDER, SECRETARY.

In the latter half of 1913 several Bronze Age burials were discovered on Burgie Lodge farm, in the parish of Rafford, Morayshire, by Mr C. M. Bruce, the tenant, whose attention was attracted to them by slight surface indications.

Very good accounts of the discoveries appeared in the local newspapers from the pen of Mr Bruce, whom I have to thank for furnishing further details. I am also indebted to Mr H. B. Mackintosh, Honorary Secretary of the Elgin and Morayshire Literary and Scientific Society, for a description of the relics recovered and for a photograph of the necklace found in one of the graves, and to Mr A. Henderson Bishop, F.S.A.Scot., for his photograph of the four Scottish jet necklaces reproduced in fig. 3.

The graves lie in cultivated land at the 100 feet contour line, on sandy hillocks and ridges on gently rising rolling ground that tends to sweep up more rapidly, to the south, towards the heather-covered muirlands that stretch away into the main mass of the Grampians. To the north is the fertile plain of Moray falling away to the Moray Firth, with the mountains of Ross and Sutherland in the distance. The district is rich in historical and archaeological associations: the ruins of Kinloss Abbey, the sites or ruins of Kilbuaick Castle, Asliesk Castle, Burgie Castle, and Blervie Castle are not far distant; the Culbin Sands, one of the richest archaeological fields in Scotland, lie only 5 miles to the west-north-west; while a stone circle and several other Bronze Age burial sites are noted on the Ordnance Survey map of the neighbourhood. The latter are probably only a fraction of the original number of prehistoric burials that originally existed in the countryside, but

which for the greater part have been obliterated during many centuries of high cultivation, the Laich of Moray being one of the finest agricultural portions of Scotland.

The first discovery took place about the beginning of August 1913, when the end of a slab-lined grave was exposed in the face of a sand-pit situated rather more than half a mile north-north-east of Burgie Lodge farm-steading, on the Thornhill part of the farm. The grave lay a few feet north-west of the summit of a small round knoll some 39 yards west-south-west of a big boulder of Stratherrick conglomerate believed to have been deposited there by glacial action. This boulder, which measures 15 feet in length, 11 feet in breadth, and 6 feet in height above the surface of the ground, has from time immemorial been known as a "fairy stone," and the "knoll had always been associated with eerie tales. It was a test of courage in past generations to go at the dead of night and kindle a fire or other light beside this stone." According to local tradition, a number of graves had been exposed in this sand-pit many years ago, and it would not be surprising if further similar discoveries were to be made as the removal of the knoll progresses.

On excavation the grave, which lay almost east and west, was found to be made of four slabs of Old Red Sandstone set on edge, with a large slab about 1 foot thick for a cover, and a smaller slab of about the same thickness superimposed on it. The cist measured 3 feet in length, 1 foot 10 inches in breadth, and 1 foot 11 inches in depth, and the floor lay about 6 feet 3 inches below the present surface level. The remains of a human skeleton lying in a crouching position on its right side, with the head in the west end, were found in the tomb. When exposed the skull was in a good state of preservation, but it was destroyed afterwards by some unknown persons. Professor Reid of Aberdeen, to whom the remains were submitted, was of opinion that they belonged to a man of about 5 feet 4 inches in height, with a brachycephalic skull, the usual class of skeleton found in the short cists of the north-east of Scotland. Although the sand which filled the grave was carefully riddled no other relics were found, but the floor of the cist, "on which the remains lay, was studded under the head with pebbles common to the district in close formation, and more open in other parts, about one-fifth of them being of white quartz, all the latter situated under the head."

Near the foot of the working face of the sand-pit, about 11 yards north-north-east of the first grave, were the displaced slabs of another cist, which had collapsed by being undermined. A small deposit of much-decayed bones was noted lying on one of the slabs.

The next cist was found about two months later, on the south-western

shoulder of a gravelly hillock in the same field, about 110 yards east-south-east of the first grave, some 3 feet below the surface. The grave was a pointed oval in shape, the narrow end lying towards the east. Formed of rough water-worn stones set on end and packed round with pebbles, it measured 2 feet in length, 1 foot 5 inches at its greatest breadth, and 12 inches in depth. The floor was formed of small pebbles with a flat stone measuring 8 inches by 6 inches in the centre, and the cover which lay across the grave consisted of a large irregular slab estimated to weigh about a ton and a half, and measuring 6 feet at its greatest length, 4 feet at its greatest breadth, and from 12 to 17 inches in thickness. At the east end of the grave, hard up against the cover, stood a kind of headstone packed round with big pebbles which were continued along the east side of the cover and about half-way across the ends. On the flat stone in the floor of the grave some incinerated bones and a thin layer of ash containing small particles of charcoal were noted.

Another group of graves was afterwards discovered, within a length of about 30 yards, in a sandy ridge which runs in a north-westerly direction and is situated about 150 yards south-west of the first-mentioned cist.

The most southerly discovery in this group consisted of a number of slabs which from their position and size were believed to have formed a short cist.

At a distance of 5 feet to the north-west lay another slab-lined grave which fortunately had not been interfered with, and which was found not only to exhibit some interesting structural features but to contain important relics. The grave was constructed of four thin slabs of sandstone set on edge. It measured 3 feet 6 inches in length, 2 feet in breadth, and 2 feet in depth, the bottom of the grave being about 6 feet under the present level of the surface. A rough stone and two narrow, thin slabs formed the cover, which was further roofed over with thin slabs embedded in clay so as to make the grave waterproof. Superimposed on this roofing were three large stones, the stone at the head of the grave appearing above ground. There seem to have been indications that the irregular jointing of the corners of the cist had been packed with clay, but this had been disturbed by the burrowing of rodents. The use of clay in this fashion has been noted before. The grave lay slightly north of north-east and south of south-west, and was found to be full of sand which had probably percolated into it since the interment, and which seemed to have been traversed by the rodents, as one of the beads of a necklace was found amongst the first sand to be removed. Near the bottom of the chamber an urn lay on its side, which

though found complete was in such a fragile condition that it subsequently broke. The remains of a human skeleton were recovered, almost entirely decayed, with the exception of part of the skull and the teeth; two of the molar teeth showed decay. The head was near the south end, and the urn seemed to have been placed behind the right shoulder. On removing the skull, over forty jet beads were found in the position apparently occupied by the breast and neck, and seemingly some of these closely retained their original position, as two groups of four beads each formed a star-shaped design. The bulk of these forty odd beads were believed by the discoverers, and not unreasonably, to have formed the lower and pendent portion of the necklace, which in the reconstruction of the ornament requires thirty-three long beads. In all, seven plates, the complete number, and one hundred and seven beads were recovered.

The urn is of the food-vessel type. While it may be possible to restore the top part, the lower portion is fairly complete, and the middle part is imperfect. It has been about $5\frac{1}{2}$ inches in diameter at the mouth and $3\frac{1}{2}$ inches at the base, while its height has probably been from $6\frac{1}{2}$ inches to 7 inches; the wall is $\frac{5}{8}$ inch thick. The decoration consists of three bands of impressed marks encircling the vessel, the two upper bands being formed by two transverse lines of impressions made by a chisel-ended tool pressed on the soft clay cornerwise and not flat, as the markings are generally triangular; the lower band had two if not three lines of similar character, and on the broad lip, which is bevelled towards the inside, there is a single row of similar markings. There is a slight moulding between the shoulder and the rim.

The necklace is made of jet or lignite, and is one of the finest and most complete yet found in Scotland. It is a very beautiful ornament, and its reconstruction as shown in the illustration (fig. 1) probably closely resembles the original arrangement of the beads and plates. It consists of one hundred and seven fusiform or barrel-shaped beads, four trapezoidal plates, two triangular terminal plates, and a triangular pendant. The beads vary from $\frac{7}{16}$ inch to slightly over 1 inch in length. The trapezoidal plates are each decorated with four triangles formed by double rows of punctulations; the triangles which have their bases on the sides meet at their apices in the centre of the plate, the two resting on the ends being of small size. The terminal plates are each ornamented with a similar punctulated triangle, which is placed within a larger triangle without a base line, and a small lozenge filled in with punctulations lies between the apices of the inner and outer triangles. The triangular pendant is not ornamented.

This is the third necklace from the locality. One (No. 17)¹ was found

¹ The numbers in brackets refer to the tables of necklaces which follow.

in the field to the west, about one-quarter of a mile distant. Its site is marked on the Ordnance Survey map, which states that it was found in 1848, but the account of it in our *Proceedings* says 1841. This site is presently known as "The General's Grave." The second necklace (No. 32) was discovered a few hundred yards to the east of the spot where the Burgie Lodge necklace was disinterred, on the adjoining farm of Newmill, Alves.



Fig. 1. Necklace of Jet found at Burgie Lodge Farm.

The last grave to be discovered was exposed in April 1914, about 25 yards north-west of the cist containing the necklace. It was formed of four slabs of sandstone about 6 inches in thickness, with a fifth for a cover. Lying north-east by east and south-west by west, the cist measured 3 feet 6 inches in length, 2 feet in width, and 2 feet 3 inches in depth, the top of the cover stone being 9 inches below the surface. The interstices between the slabs were built up by neatly fitting stones with clay used as mortar. The floor was covered with a layer of wrought clay. The grave contained the much-decayed remains of a human skeleton, the skull lying at the western end, and fragments of

an urn which had been placed close to the head were found near the right shoulder. It was described as of the "small, wide-mouthed variety, probably not over 6 inches in height. The upper part showed three lines of ridge mouldings with zigzag reversed markings on the sloping sides of the mouldings. The rim was thick and everted, showing vertical markings on the brim and on the inside of the lip. The lower band had an ornamented design of intercrossed zigzags." From this description there seems little doubt that the urn was of the food-vessel type.



Fig. 2. Slab in Cist showing hollows formed by grinding stone axes.

The most important feature in the grave, however, was the occurrence of "cup-shaped and other markings on the south-side and west-end slabs. . . . One resembled a cup-shaped quern or mortar for pounding corn. Others were hollowed out lengthways, apparently by the action of a large pebble, while one suggested the action of a square-edged instrument. Some others of the markings showed doubtless evidences of their use as whetstones."

Since reading this paper I visited the site, and Mr Bruce very kindly had part of the cist laid bare for my inspection. The slab on the south side (fig. 2), which measured about 3 feet 4 inches long, 2 feet 3 inches high, and 8 inches in thickness, bore six (possibly seven) oval hollows measuring about 9 inches in length, 6 inches in breadth, and at most

2 inches in depth in the centre, on the outer side of the stone. There were also two roughly circular cup-like hollows, apparently natural. The oval hollows were smaller than the cavity of a saddle quern, and with the exception of one the edges were less abrupt, and it is not unlikely that they had been formed by the slab having been used for grinding or rubbing stone axes into shape. The stone at the western end of the grave showed three similar hollows, but these were more weathered than those on the side slab. Several examples of stones for grinding stone axes have been found in Scotland. One in the National collection from Glenluce Sands is said to have been found with a small stone axe lying in the hollow; another from the same district, in the collection of Mr Ludovic M'L. Mann, is of the shape of a truncated pyramid with steep sides, hollows being worn on each side; a third was found by Mr A. O. Curle in a Bronze Age kitchen midden near Gullane;¹ and what may be a fourth, as it seems too small for a saddle quern, was found at Traprain.

While this cist was being laid bare at the time of its discovery the presence of a number of slabs was detected some 6 feet to the south-east, and these on further examination proved to be the remains of yet another grave which had been dismantled at some previous time.

Altogether seven graves were brought to light: three consisted of complete slab-lined short cists, three were dismantled cists, and one of oval shape was formed of water-rolled boulders. The latter was the only one containing evidence of cremation.

These do not exhaust the list of recorded Bronze Age burials found in the immediate neighbourhood, as the two cists which have already been mentioned as containing a jet necklace each have to be included.

A locality in which so many Bronze Age interments have been discovered might be expected to produce numbers of bronze implements. So far as I can learn, the only example of this class of relic found is a socketed bronze axe from Burgie, which is preserved in the Falconer Museum, Forres. But in land which has been so long under cultivation as this these relics have little chance of being overlooked and surviving to modern times. An important hoard of bronze weapons and implements, however, was found in the village of Findhorn, and was secured by a Morayshire collector of antiquities, in whose collection I saw them about twelve years ago. The hoard consisted of two socketed and looped spear-heads, a socketed axe with loop, a socketed implement with curved blade of the type found in Skye and at Wester Ord, Invergordon, and a razor.

It is fortunate that these important discoveries on Burgie Lodge farm

¹ *Proceedings S.A. Scot.*, vol. xlii. p. 309.

should have been made by such a careful observer as Mr Bruce, who was assisted in his excavations by his brother, Mr W. D. Bruce; and it is gratifying to know that the necklace and urn fragments have been presented to a public institution, the Elgin Museum, by Mr Alexander Thomson of Burgie, on whose land they were found.

NOTES ON SCOTTISH PREHISTORIC JET ORNAMENTS.

Bronze Age Jet Ornaments.—Before dealing with the question of necklaces and other prehistoric ornaments of jet found in Scotland, it should be stated that the word “jet” is used only as a generic term. Very few of the objects have been made of pure jet, and more frequently use has been made of varieties of lignite, shale, cannel coal, or parrot coal. Lignite in its various forms is widely distributed throughout Scotland; a brownish variety is found at Brora in Sutherland, and shale or cannel coal is found in Skye and Bute as well as in the coal-producing counties.

Jet was esteemed by the Romans on account of its reputed medicinal qualities. Like amber, it becomes electrical when rubbed, an attribute that might easily have been noticed by the ancient jet-worker, as polishing was one of the final processes in the manufacture of ornaments. While there is no evidence to show that the prehistoric inhabitants of these islands valued it on account of these qualities, in the beginning of the eighth century, in Northumbria, it was believed that when heated it drove away serpents,¹ a peculiarity mentioned at an earlier date by Pliny amongst others. There is at least one record of an ancient Scottish jet ornament being credited with medicinal virtues in comparatively recent times. This was a ring of jet found in 1753, in a cairn at Inchinnan, Renfrewshire, which was preserved in the parish of East Kilbride because of its reputed curative powers.² But in this case it is not unlikely that it was valued because it was a holed stone, and not from any inherent quality of the material.

In Britain the use of different kinds of lignite and shale in the manufacture of personal ornaments began in very early times, and though it has continued down to the present day, we have to go back to the Bronze Age to find the finest examples of the jet-workers' handicraft; at least I have never seen a jet ornament fashioned in modern times to equal, far less excel, in beauty or design, the necklace which has just been described—and it is only one, not the best, of a considerable number found in Scotland.

Necklaces are the finest and most elaborate of the prehistoric ornaments of jet found in Britain; and though Bronze Age ornaments

¹ Bede, *Eccles. Hist.*, book i., ch. i.

² *Proceedings*, vol. xxvii. p. 454.

of this material are found from the south of England to the north of Scotland, and in Ireland, it would seem that necklaces more frequently occur in Scotland than in any other part of the British Isles. It is surprising to note that in over twelve hundred Bronze Age graves excavated by Canon Greenwell and Mr J. R. Mortimer in Yorkshire, a county producing the finest jet, only eight necklaces were found;¹ while in Scotland, where there has been wholesale destruction but no extensive scientific exploration of burial cairns, at least forty examples have been recovered, nearly all from Bronze Age interments. As for the Continent, Sir John Evans remarks that he is "not aware of any of the jet necklaces having occurred"² there.

Scottish jet necklaces fall into two broad groups, one composed of a single string of beads, and the other of a more elaborate arrangement of plates and beads, forming a crescentic pattern worked out on regular lines. Though both groups are obviously capable of further sub-division, only these two main ideas are expressed.

In the first group, comprising ten examples,³ the simplest variety consists of small, thin, circular discs, centrally perforated, with a single triangular pendant in the centre of the string of beads, which are very finely graded in respect of their diameter. Only one perfect example (No. 1) (fig. 3, No. 3), found inside a small cinerary urn, near which was a broken stone axe, has been recorded from Scotland, while three have been found in Yorkshire.⁴ The English necklaces were found in women's graves, of which two contained a food-vessel urn. One of them had a large circular disc instead of the usual triangular pendant in the centre of the string. The small discoid bead seen in these necklaces continued to be worn into the Early Iron Age in Scotland, as a very beautiful necklace formed of fifty-nine amber beads of this type was recovered from a brooch, Dunan Iardhard, in Skye,⁵ recently excavated by the Countess Vincent Baillet de Latour, who presented the necklace to the National Museum along with the other relics found in the building. What seems to have been a partially made necklace was found in Dunrobin Park, Sutherland, in a cist containing a skeleton of a young woman and a drinking-cup urn. It consisted of one hundred and eighteen discs of shale, about the size and thickness of a threepenny-piece, of which six were perforated.⁶

¹ *British Burrows*, pp. 52, 53; *Forty Years' Researches*, li.

² *Ancient Stone Weapons*, 2nd ed., p. 460.

³ I am informed by Mr Mann that a necklace of this type was found when making the railway from Stranraer to Portpatrick, Wigtownshire, and another on the Stevenston Sands, Ayrshire. The particulars of the discovery of the first of these are mentioned in the *Transactions of the Dumfriesshire Natural History and Antiquarian Society*, Third Series, vol. iii. p. 119. As there are no descriptions of these necklaces, I have not included them in the tabulated lists printed in this paper.

⁴ *Proceedings*, vol. xxxvi. p. 589.

⁵ *Ibid.*, vol. xlix. p. 64.

⁶ *Ibid.*, vol. xxxviii. p. 338.

The four examples (Nos. 3, 4, 5, and 6) are probably incomplete, and it is impossible to say whether they belonged to the variety just described or to the next class. The first of these four, from Caithness, having been found in the chamber of a long-horned cairn, might be assigned to the end of the Stone Age; but as it was discovered in a short cist, containing

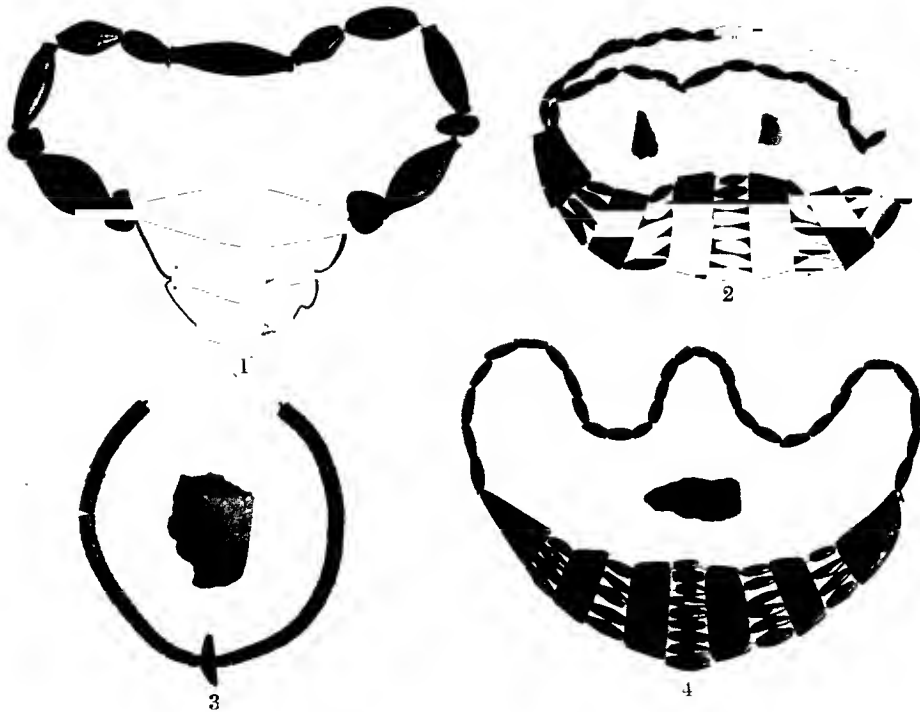


Fig. 3. Scottish Jet Necklaces:—No. 1, Cruden, Aberdeenshire; No. 2, Torrish, Ross-shire; No. 3, Glenluce Sands, Wigtownshire; No. 4, Edderton, Ross-shire.

human remains and fragments of a string-marked urn, erected within the chamber, it without doubt belongs to the subsequent Bronze Age. The next specimen (No. 7), composed of discoid and fusiform beads of jet as well as one of bone, was found in a cairn containing burnt and unburnt human remains, seven food-vessel urns, of which two had rounded bases, and a miniature urn, the smallest found in Scotland. Although the following entry in the group consists of only one bead, and that of fusiform shape, it is included among the necklaces, because it was found in

an apparently undisturbed cist, along with a food-vessel urn, and thus may have been the sole ornament possessed by the wearer. In the Lanarkshire necklace (No. 10) six of the beads are of jet and three of amber, and they are shaped like diminutive stone axe-hammers. The example from Cruden (No. 9) is a magnificent relic, and contains twelve large, oval, jet beads and three rough, perforated blocks of amber (fig. 3, No. 1); the beads expand widely at the centre, have a slight moulding at the ends, and vary from $1\frac{1}{8}$ to $4\frac{1}{8}$ inches in length. It was found in a small cairn which contained portions of the skeletons of two persons said to have been those of a man and a child. There were also found two drinking-cup urns, a fine flint axe, a stone-bracer, and seven arrow-heads, one of which, of the barbed and stemmed variety, has survived. As this cairn was explored nearly a century ago, it is doubtful if much reliance can be placed on the statement regarding the sex of the human remains, necklaces being generally found in women's graves. Still, on the other hand, the bracer, arrow-heads, and axe are more appropriate to a man than to a woman, and the presence of drinking-cup urns might be considered to point to the same conclusion. Elsewhere I have drawn attention to the fact that of the thirteen human skeletons found in short cists with drinking-cup urns in Scotland, which have been examined by anatomists, twelve were found to be men's skeletons and only one that of a woman.¹ This rule, however, is not so constant in England.

Two of the ten examples in this group come from Buteshire, and one from each of the counties of Caithness, Sutherland, Inverness, Aberdeen, Kincardine, Fife, Lanark, and Wigtown, their distribution being fairly well spread throughout the country. Besides these there are a number of beads in the National Museum that probably formed portions of necklaces. Six beads of jet came from Mouswald Place, Dumfriesshire,² but the record of their discovery is very indefinite. There are also single fusiform beads from Bizzieberry Hill, Biggar, Lanarkshire; Watch Hill, Loch Skene, Dumfriesshire; and Pencaitland, East Lothian; the second of these is $4\frac{1}{2}$ inches long, and the last, which is of flattened oval shape, is as much as 6 inches in length and 3 inches in breadth at the widest part. Many unassociated beads have been found on the Glenluce, Culbin, Shewalton, and Stevenston Sands. Half of an oval jet bead and portions of two of shale, with no localities but probably from the south of Scotland, are in the museum at Maxwellton, Dumfries.

Fusiform beads, some of very large size, have been found in English Bronze Age graves. Canon Greenwell has recorded a long bead of square section and regular thickness which was found associated with

¹ *Proceedings*, vol. xli. p. 121.

² *Ibid.*, vol. xxiii. pp. 26 and 121.

long fusiform beads, as also one of square section but swelling towards the centre.¹

The second group totals no less than thirty necklaces or portions of necklaces, and thirteen of these, including the finest specimen, are preserved in our National Collection. These necklaces consist of plates of trapezoidal and triangular shape and fusiform beads arranged so as to form a meniscus or crescent, with a double string of fusiform beads, attached to each terminal plate, for encircling the neck. There are two distinct varieties in this group, premising that the first two examples (Nos. 11 and 12) are complete. The first variety is in the form of a simple crescent, and the second, which is the more numerous, differs only from the first in having a triangular network of beads ending in a triangular pendant at the lower apex, depending from the crescentic part of the necklace. The crescent in both varieties has two triangular plates for terminals, with trapezoidal plates set vertically or rather radially at regular intervals between them; and the intervening spaces are occupied by fusiform beads, carefully graded in length, lying in the same plane as, and at right angles to, the longer axis of the trapezoids.

The first variety calls for little comment except that the first two examples (Nos. 11 and 12) show a wonderful resemblance to each other, and the fifth (No. 15), from Pitreuchie, is so small that it resembles rather the ornament of a child than that of an adult. It was found in a cist containing unburnt human bones, fragments of a food-vessel urn, and another necklace (No. 24) of the variety with the hanging network of beads. The bones do not seem to have been examined, but it is a reasonable inference that they were those of a mother and child. The Edderton necklace (No. 11) was found in a short cist, 3 feet 6 inches long, 2 feet wide at the east end, 2 feet 9 inches at the west end, and 2 feet in depth, which was exposed by the plough. A knife of black flint was found with it. As restored (fig. 3, No. 4), the triangular terminal plate on the right and the adjoining oval bead are counterfeits made to complete the design. All the beads in this necklace are of large size.² The necklace found at Fordoun House (No. 13) possibly belongs to this class. There is no triangular pendant as in the more elaborate variety; but though its absence is not conclusive, as many beads are missing and the pendant may have been lost, still the general resemblance of the necklace to the two Ross-shire specimens may justify the attribution. No details of its discovery are known, except that it was found in a cist. The crescent has consisted of six plates, of which the central and terminal plates on the right-hand side and the medial plate on the left side are wanting, as well

¹ *British Barrows*, pp. 334 and 366.

² The illustration presents a back view of the necklace and shows how the plates are bored.

as many of the beads. Of the latter there are twenty-one of fusiform shape, and fragments of other two. There is also a long narrow triangular plate pierced with two perforations at the base, which converge to form one orifice at the narrow end. As this plate is ornamented in the same style as the others, it seems to have belonged to the same necklace, and not unlikely is one of the two terminals of a double string of beads for the neck, a feature seen in the Balgay example (No. 26). The perforations on the plate show that there had been eight rows of beads in the central space, and four rows in the other spaces between the plates, of which the ornamentation consists of a punctulated design of lozenges and straight lines. These pieces have not been strung, but are preserved loose in a box which also contains a broken trapezoidal plate pierced with three holes on one edge and six on the other, another with four perforations, a small incomplete triangular plate pierced at the narrow end, and two small quadrate pieces of shale. The perforations and other indications on the two trapezoidal plates show that they could not have formed part of the necklace just described, and thus seem to be the surviving parts of other two necklaces (Nos. 38 and 39). Of the Assynt specimen (No. 14) only one trapezoidal plate has survived, but there are six triangular plates of the terminal variety. Two of them are large, and evidently formed the ends of the crescent; two are of smaller size, and may have been placed so as to form a continuation of the crescent; and the remaining pair, which are still smaller, were doubtless the terminals of the strings for attachment. Some confusion has arisen regarding the illustrations of this necklace. That in *Archæologia Scotica*, vol. iii., is correct, as it agrees with the necklace in the National Museum; but the figure appearing in *Ancient Stone Implements* under the title of Assynt, Ross-shire, bears no resemblance to the original, and is borrowed from the *Prehistoric Annals of Scotland*, where it is entitled Roxburghshire. The accompanying text in the latter work is not clear; but if the title is correct, the necklace, which is a fine one, ought to be added to the list of Scottish necklaces. It is impossible to say whether the Assynt example should be placed in the first or second variety of Group II., as it is incomplete.

In the second variety there is wonderfully little variation in design, if we are to judge by the examples, which seem to be complete or nearly so. The favourite number of trapezoidal plates, as in the first variety, is four, but six occur in the Melfort (No. 25) and Rothie-Norman (No. 30) necklaces. In the one from Balgay (No. 26) four triangular terminals were found in addition to the other plates and beads, but two of them are of small size and doubtless formed the ends of the string for the neck, as in the Assynt (No. 14) and Fordoun (No. 13) necklaces. As

these terminals are provided with two holes in the broad end, it is evident that the neck strings consisted of a double row of beads. The triangular pendant at the lowest part of the underhanging network is never ornamented like the other plates. It lies in the same plane as the rest of the ornament, the holes for suspension being very frequently drilled in the base, so that it hangs inverted. Occasionally, however, the perforation passes straight through the plate as in the Burgie Lodge necklace and in the plate from the Newmill find. In this it resembles the triangular pendant in the single-string necklaces like the Glenluce example, which being perforated in this fashion lies parallel to the other discoid beads which go to make up the necklace.

A triangular terminal plate, two trapezoidal plates, a triangular pendant plate pierced from front to back, a small square plate with two transverse holes, six fusiform beads, and a few fragments of others are preserved in Elgin Museum. Some of them are labelled Branstone, Urquhart, and some Newmill, Alves, but apparently they have got mixed. The only thing that is certain about their provenance is that the triangular terminal and the small square plate were found at the latter place, as they answer the description in our *Proceedings*.

To design and fashion these ornaments required much skill and artistic feeling on the part of the Bronze Age craftsman, and we know that he did not confine the exercise of these faculties to the manufacture of jet, but applied them to the working of such metals as bronze and gold. He had few mechanical contrivances, and, though in Scotland he did not know of the potter's wheel or turning lathe, he probably used a drill, perhaps a bow-drill. His pottery was hand-made, as also the fusiform beads, which were not turned but shaped by hand, because many of them show angular facets not quite ground away, especially towards the ends. Great skill and dexterity were required to drill correctly the long holes in the beads and plates, as the least deviation from the true line in drilling would spoil the object. The plates exhibit two kinds of perforations for stringing: sometimes the channel for the thread is drilled through the whole width of the plate, and sometimes there is only a short perforation drilled from the edge of the plate at an acute angle, so that it comes out at the back. Occasionally both styles are seen on the one plate, as in the Lunan Head necklace (No. 22), in which the plate next to the terminal of the crescent required four beads on one side and five on the other to form the design, and so, while four holes entirely traverse the plate, the extra one on the longer side is of the short, angled kind. The predominating number of beads between the two central plates is eight, though seven and nine are occasionally seen; five is the favourite, though not invariable

number in the next space; and adjoining the terminal four are usual. The plates as a rule are decorated on the upper surface with a punctuated design formed after the object had been polished. The designs take the form of chevrons, triangles, lozenges, and rectangles, with plain alternate spaces. To ensure a correct alignment of the pattern a faint draught line was sometimes scratched on the plate. The decorative motives are rectilinear and geometrical, and simply follow those seen on other relics of the period, axes and small oval knives of bronze, lunulæ of gold, and drinking-cup urns. In some of the necklaces the plates are not ornamented, as in the Bogheadly (No. 27) and Rothie-Norman (No. 30) examples.

The discoid beads generally vary from about $\frac{1}{4}$ inch to about $\frac{3}{8}$ inch in diameter, and are usually about $\frac{1}{16}$ inch to $\frac{3}{32}$ inch thick. The fusiform beads differ greatly in size, but most of them are less than an inch in length. In the Burgie Lodge necklace they have been assorted into fourteen different sizes varying from $\frac{1}{16}$ inch to slightly over 1 inch in length, while in the Cruden example (No. 9) they range from $1\frac{1}{8}$ inch to $4\frac{1}{2}$ inches in length.

The association of amber and jet has been noted in two necklaces of the first group, from Cruden and from Lanarkshire, and in the necklace from Rothie-Norman in the second group. The same thing is seen in a late Bronze Age hoard of ornaments and other objects found in an urn at Balmashanner, Forfar.¹ The hoard consisted of a necklace of twenty-eight spheroidal beads of amber, more or less compressed, and five of jet, a socketed axe, thirteen penannular armlets, three large and six small rings of bronze, four penannular hollow rings of triangular section of thin gold, three penannular rings of bronze covered with thin gold, and an imperfect bowl of cast bronze. In England jet and amber beads have been found in association, and in addition there is more than one record from the south of that country of segmented beads of vitreous paste of bluish-green colour having been found with beads of jet and amber. Necklaces entirely made of amber have also been found both in Scotland and England. Twenty-seven beads of this material and two thin discs of gold were discovered at Huntiscarth, Harray, Orkney, in a grave in a mound which contained burnt human bones.² Many of the beads are of triangular shape, are small in size and perforated on the base, and two of the pieces are hook-shaped. A very fine amber necklace was found in a woman's grave in a barrow at Lake, near Stonehenge. Other ornaments of this material have not infrequently been recovered from Bronze Age graves in Wiltshire.

A glance at the lists of Scottish necklaces and their associated

¹ *Proceedings*, vol. xxvi. pp. 174, 182.

² *Ibid.*, vol. iii. p. 183, pl. xxii.

remains shows that the great majority of them were found in stone cists containing human remains, and these invariably unburnt. It is only to be expected that they would be found in the graves of women, but the sex of the occupants of the Scottish graves has very seldom been ascertained. Where this has been done the skeleton has been found to be that of a female, a possible exception being the Cruden burial already discussed, the record of which, however, is not conclusive. The evidence from Yorkshire and Wiltshire barrows shows that graves containing necklaces are those of women. The pottery found with these ornaments includes food-vessel, beaker or drinking-cup, and cinerary urns. In many of the Scottish discoveries pottery has been noted without the class of urn being recorded. However, eleven necklaces were found with food vessels, four with drinking-cups, and two with cinerary urns.

The distribution of the necklaces of Group II., like those in Group I., is fairly general throughout Scotland; but of the former group twenty-one of the thirty specimens were found in the north-eastern counties—taking the Tay as the southern boundary,—eight in Morayshire, six in Forfarshire, three in Ross-shire, and two each in Kincardineshire and Aberdeenshire. As two were found in Fife, only seven come from the south and west, three from Buteshire, two from Argyll, and one each from Renfrewshire and Roxburghshire. The outstanding feature in the necklaces in Group II. is their remarkable adherence to one standard pattern, as if many of them had been turned out of the same workshop or made by a jet-worker who had perambulated the country plying his trade. But there is no need to labour the case; the data are too scanty to build up any such hypothesis, and no trace of any Bronze Age jet factory has been recorded in Scotland.

It has been seen that the second variety of Group II.—that is, with the hanging network—is just a development or elaboration of the first variety of simple crescentic form, and consequently may be considered of a slightly later date. The chronological position of the Scottish jet necklaces according to the evidence of their associated relics seems quite clear. They are usually found with food-vessels and drinking-cup urns, which are now believed to belong to the early part of the Bronze Age, or at least are earlier than the cinerary urn. The Greenhill necklace (No. 7) in Group I., consisting of discoid and fusiform beads, was found in the same cairn as round-based food-vessels, an early variety of that class of pottery; and the Cruden necklace (No. 9) in the same group was associated, *inter alia*, with two drinking-cups and a flint axe. The Melfort necklace (No. 25) in Group II. was found in a grave containing two bronze armlets, whose ornamentation resembled that on the fragment of an

armlet found at Migdale, along with other relics, including the early flat bronze axe and jet buttons, the latter of which have been found with necklaces in England. The different lines of evidence furnished by the grave goods found with the necklaces clearly converge on one period, the first part of the Bronze Age.

The absence of globular beads in the list of Scottish jet necklaces is remarkable, and I have not been able to trace a single example from a Scottish Bronze Age dwelling site or burial, though they have occasionally been found in England.

The use of jet was not confined to the fabrication of necklaces during the Bronze Age in these islands, as a variety of objects of other kinds made of this material has been discovered in deposits dating to that period.

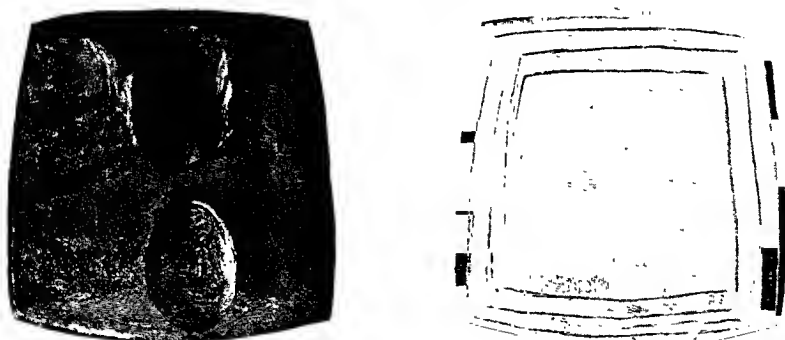


Fig. 4. Square Button, Law Hill, Dundee.

The jet button is the most numerous of these relics, but it cannot be considered common in Scotland. It is usually circular in shape, flattened on the under side, with rounded conical top. Occasionally it is oval instead of round, and one specimen from a cist on Law Hill, Dundee, Forfarshire (fig. 4), is rectangular and flat.¹ The holes by which they were attached to the garment do not pierce the button from front to back as they do at the present day, but are drilled from the under side so as to converge till they meet in the body of the object, and form an inverted V-shaped passage for the thread. By making the hole in this way the polished, exposed, upper surface of the button was unbroken, although in a very few cases the upper skin has been pierced. As a rule there was no attempt at ornamentation of the top, which presented an unbroken glossy surface, the only ornamented Scottish example being the rectangular button from Dundee Law, which bears three

¹ *Proceedings*, vol. xxiv. p. 10.

parallel lines incised round the border. Decorated specimens are also rare in England, but three at least have been recorded from Yorkshire barrows;¹ the first, from Rudstone, is ornamented with the pattern of a Maltese cross within a narrow, circular, marginal band, all hatched with straight lines; the second, from Thwing, is very similar; and the third, from Butterwick, which is of sandstone, not jet, has four straight lines incised crosswise on the top and a circular marginal line on the under side. An interesting example, which was found with a small axe-hammer, portions of three bronze armlets, and some flint chips, in or near a stone circle at Cairn Riv, Inverkeithney, Banffshire, has been bored twice, as the first fixing had got broken; the second boring was at right angles to, and deeper than, the first, with the result that the top skin of the button has been pierced.²

Sets of fancy buttons are no modern invention, as we can show that they were in vogue in Scotland centuries before the Christian era. The largest set of jet buttons found in Scotland numbers six, and these, varying from $1\frac{1}{8}$ inch to $1\frac{3}{4}$ inch in diameter, were found in an early Bronze Age hoard of relics at Migdale, Skibo, Sutherland.³ The hoard consisted of the buttons and two flat axes, three pairs of plain armlets, one pair of ornamented armlets and a portion of another, one (or probably two) ear-rings, four (or possibly five) conical, hollow bosses, and forty (or thereby) tubular beads, all of bronze. It may be mentioned that the tubular beads, as now strung, form a necklace very similar in design to some of those in Group II. An interesting feature of these beads is their wooden core, a peculiarity referred to later in dealing with the conical buttons of the same period from Wiltshire; only, the buttons were covered with a thin plate of gold instead of bronze as in the case of the beads. Five buttons of jet from 1 inch to $2\frac{1}{4}$ inches in diameter were found in a mossy tussock on the Burnt Hill, Lochee, Forfarshire, with no associated relics.⁴ A set of three (fig. 5), from $\frac{3}{4}$ inch to $1\frac{3}{8}$ inch in diameter, was found beside a large cinerary urn surrounded by rough blocks of stone, on a knoll at Old Windymains, Keith Marischal, East Lothian.⁵ Close to this deposit was a cist containing a human skeleton in a contracted position, and a broken urn, apparently about 6 inches in height, the class of which was not ascertained. The last two sets are in the National Museum. In the same collection are preserved the following specimens: three from the Glenluce Sands, two from Letham, Forfarshire, and one from Crawford Muir, Carstairs, Lanarkshire. A small oval button in the collection of Mr Mann was also found on the Glenluce Sands in apparent association with a sandstone bead and a

¹ *British Barrows*, pp. 32, 33, 187, 188, and 264.

³ *Ibid.*, vol. xxxv. p. 274.

⁴ *Ibid.*, vol. xxxvi. p. 464.

² *Proceedings*, vol. xxxvii. p. 124.

⁵ *Ibid.*, vol. xxxiii. p. 68.

string-marked beaker urn. One of the Glenluce buttons is only $\frac{1}{2}$ inch in diameter, and it will be noticed that in the three sets referred to no two buttons are of the same size.

In the Old and New Statistical Accounts of Scotland records of discoveries of jet objects are occasionally met with, and among those referred to by Sir Daniel Wilson in his *Prehistoric Annals of Scotland*, there is one stating that five studs or buttons of different sizes made of polished jet and two urns were found in 1832 in a short cist, at Dubbs, in the parish of Stevenston, Ayrshire.¹ The buttons were

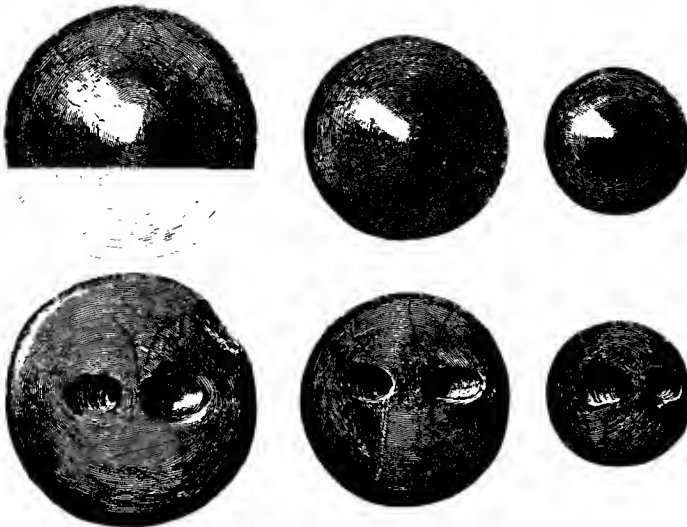


Fig. 5. Three Buttons, Keith Marischal.

“convex on the one side and concave on the other, with knobs left in the latter, seemingly for attaching them to the dress.”

The subject of jet buttons with V-shaped perforations has been dealt with in an exhaustive paper by Dr Robert Munro.² In it he shows that they are more frequently found in England than in Scotland, and that a few have been found in Ireland; also that on the Continent, while buttons of the same type are seen, the material of which they are fashioned is not jet but such substances as amber, stone, ivory, bone, and shell. It may be recalled that necklaces of jet are not found there either.

It would appear that these buttons were not always used as dress fasteners in England. Canon Greenwell discovered twenty of jet and

¹ *New Statistical Account*, vol. v. p. 454.

² *Proceedings*, vol. xxxvi. p. 464.

a penannular ring of bronze in a barrow at Hunmanby, Yorkshire.¹ Twenty-six of amber, preserved in the Ashmolean Museum, Oxford, were found with other Bronze Age relics in a barrow 7 miles from Sarum.² From the large numbers found at these places it is believed that they may have been used as necklaces and not as dress fasteners. They have also been found in graves containing jet necklaces in such numbers as to suggest that they formed part of these ornaments. In one of the Calais Wold group of barrows in East Yorkshire, ten of these buttons were found in association with beads and plates of a fine jet necklace.³ The small oval button has also been found in England.

A very beautiful variety of the jet button with V-shape perforation has been repeatedly found in Wiltshire. It is conical, but the cone is high, terminating in a sharp point, instead of a rounded apex like many of the other buttons. This conical core of jet, sometimes of wood, was covered with a thin, ornamented plate of gold lapped over the lower edge to keep it in position.

Like the necklaces, the buttons belong to the early part of the Bronze Age, as demonstrated by the Migdale hoard and confirmed by discoveries in England, where it is in men's graves that they are generally found.

A peculiar jet



Fig. 6. Ring, Yarrow Kirk.

object of unknown use is a ring, concave on the periphery, measuring $1\frac{1}{2}$ inch in diameter on one edge and $1\frac{1}{2}$ inch on the other, and pierced with four small holes at irregular intervals on the sides (fig. 6), which was found in a cist near Yarrow Kirk, Selkirkshire.⁴ The cist, one of a group of eight, lay within 10 or 12 yards south of the most easterly of three standing stones set in a line running east and west, close to which was a stone cairn containing a considerable quantity of human bones. One of the cists yielded the fragments of an urn. A ring of

almost exactly similar form, $1\frac{1}{2}$ inch in diameter, was found at West Mains, Mid-Calder, Midlothian,⁵ and another near Lesmahagow, Lanarkshire.⁶ Mr Mann has part of one found on the Glenluce Sands, and I picked up a fragment of another on the same area. Since this paper was read, the Rev. R. S. G. Anderson, New Luce, has presented to the National Museum a complete ring of this class which was found in the neighbourhood of New Luce. This specimen differs slightly from the others, in that it is more rudely fashioned, has no perforations, and is

¹ *Archæologia*, vol. lii. p. 19.

² *Forty Years' Researches*, p. 166, fig. 418a.

³ *Ibid.*, vol. ix. p. 538.

⁴ *Proceedings*, vol. xxxvi. p. 473.

⁵ *Proceedings*, vol. ii. p. 484.

⁶ *Ancient Stone Implements*, p. 456.

ovoid in shape, not round. It has much the appearance of the short neck of some of the earthenware bottles in which ink is sold to-day.

A type of ornament very rare in Scotland, and occasionally found in England, is a cylindrical piece of jet thickening slightly towards the middle and pierced with a lenticular slot extending the greater part of its length, which, it has been suggested, may have been used as a belt mounting, or fastener. The only Scottish examples recorded were found in the island of Skye and in a segmented cairn at Beacharra, Kintyre, Argyllshire.¹ The first, preserved in the National Museum, measures 3 inches in length, and the second (fig. 7), now in Campbeltown Museum, $3\frac{5}{16}$ inches. As the Beacharra example was found in a segmented cairn, it might be considered to belong to the late Stone Age, but it was found not at the bottom of the chamber, where the round-based urns were placed, but near the surface of the debris in the grave, showing that it must have come there at a time subsequent to the deposition of the pottery. Clearer evidence regarding the period of this class of object has been forthcoming in England, as several have been found in Bronze Age graves in Yorkshire. Canon Greenwell has figured an example almost identical with those found in Scotland,² and Mr J. R. Mortimer records three,³ all from Yorkshire. Two of the last-mentioned examples are slightly thicker than the Scottish specimens, and the ends of the slot are not so sharp; the third is shorter, and the hole is wider in proportion to the length. An object of somewhat similar type, which was found on Hambleton Moor, also in Yorkshire,⁴ is shorter than any of these objects, and has a large circular hole. In the collection of Mr A. Henderson Bishop, F.S.A. Scot., is a hammer-shaped object much resembling the last article, and measuring $2\frac{1}{16}$ inches in length, $1\frac{1}{8}$ inch in thickness, and $\frac{1}{16}$ inch in height, with a circular perforation $\frac{5}{8}$ inch in diameter, which was found at Hallmyre, Newmains, Peeblesshire.

Attention may be directed to several objects that have been found in Bronze Age deposits in England but not in Scotland. The first of these is the so-called pulley ring, which occurs both in the south and north of England. In section the ring, which has an internal diameter of about $\frac{5}{8}$ inch, is square, and there is a varying number of V-shaped perforations bored round the edge. In some cases it is devoid of orna-



Fig. 7. Belt Fastener(?), Beacharra.

¹ *Proceedings*, vol. xxxvi. p. 104.

² *British Barrows*, p. 34, fig. 6.

³ *Forty Years' Researches*, pp. 73 and 127, figs. 154, 320, and 445.

⁴ *British Museum Bronze Age Guide*, p. 94, fig. 91.

ment, but often it has the sides and periphery decorated. These rings have been found in graves containing jet buttons and other relics, and Sir John Evans has stated that "there can be little doubt that the ring and stud (button) together formed some sort of clasp or fastening, but in what manner the string which passed through the perforation was managed, it is difficult to say."¹ Large jet studs very similar to, but more clumsy than, the collar stud of to-day have been found in Bronze Age deposits in England,² as also a few pendants of various shapes, the most interesting of which is shaped like three flat rings conjoined in a straight line, with a laterally perforated protuberance on the top edge of the central ring for suspension, which was found in Derbyshire, in an urn containing burnt bones, a globular and a fusiform bead.³ A cylindrical piece of jet encircled with broad grooves, found in a Yorkshire barrow, may also be mentioned.⁴

The whole of these objects seem indubitably to belong to the Bronze Age, and considering that many of them display much skill in their manufacture, it is rather strange to note the almost invariable absence of the simple globular bead and the plain ring. An occasional specimen of the former has been discovered, as in the Derbyshire find referred to, but they are very rarely found in the Yorkshire barrows, and I do not know of a single Scottish example which can be said to belong to this period: of the latter the same might also be said, as the few English examples discovered have possibly formed parts of necklaces and were not worn as finger-rings or armlets.

Early Iron Age Jet Ornaments.—The ornaments of jet made during the Early Iron Age exhibit neither the elaboration nor beauty of those made in the earlier period, the Bronze Age, in Scotland, where they continued to be made by hand probably into the Early Christian period. While we have usually to depend on the evidence contained in graves for fixing the chronology of the ornaments of the earlier time, we have to turn to sites of human habitation for similar information about those fashioned after the introduction of iron.

The commonest ornament in jet of this period is the ring, which varies very much both in size and character. It ranges from the size of a small finger-ring to that of a bracelet and even larger, with many intermediate grades quite unsuitable for wearing either on the finger or arm. Some of the rings are semicircular in cross-section or are flattened on the inside, others are circular in section, and a

¹ *Ancient Stone Implements*, p. 454.

² *Forty Years' Researches*, p. 47, figs. 74 and 75; *British Museum Bronze Age Guide*, p. 93, fig. 92.

³ *Ancient Bronze Implements*, p. 463, fig. 381.

⁴ *Forty Years' Researches*, p. 218, fig. 559.

few show a flattened oval or lenticular horizontal profile when cut through. There is no dubiety about the use of the first-mentioned class, they were evidently worn on the fingers or arms. Some of those in the second variety are large enough to be worn as armlets, and no doubt were so used, but others have orifices of a size unsuitable for either the finger or wrist, and must have been worn in some other manner; even those which slip on to the finger would be very uncomfortable to wear. The third variety was worn neither on the finger nor the arm, as it is unsuitable both in size and shape.

As a rule the rings are plain, but ornamented examples have to be noted from the fortified sites on Dunagoil, Traprain, and Castle Law, Abernethy. Mr Mann has the fragment of a massive jet armlet, found at Glenluce, the outside of which takes the form of a prominent ridge with concave sides.

Rings of varying size and type have been found in fair numbers on the Glenluce and Culbin Sands, and on the sandy districts in Ayrshire known as the Shewalton Sands and Stevenston Sands. Half of a finger-ring and fragments of three armlets, from Tents Muir, Fife, another sandy area, are preserved in the museum in the Albert Institute, Dundee. Occasionally they are found on cultivated ground, though they are more difficult to see among soil, which they resemble in colour, than among light-coloured sand which gets carried away with the wind. For this reason drifting sands have specially attracted collectors, and the number of relics recovered from them probably gives a fictitious idea as to the relative archaeological richness of some of these compared with many a cultivated district. In the National Collection there are preserved rings from different parts of the country widely separated from each other: one, $4\frac{1}{2}$ inches in diameter, from a moss at Dalry, Ayrshire; one, 4 inches in diameter, from Knockando, Morayshire; one, $3\frac{1}{2}$ inches in diameter, from Skye; one, 2 inches in diameter, from West Calder, Midlothian; one, 4 inches in diameter, from Hatloch, Peeblesshire; one, $\frac{3}{4}$ inch in diameter, from Huntly Castle, Aberdeenshire; one, $2\frac{1}{2}$ inches in diameter and coarsely made, from Corsock, Kirkcudbright; a fragment from Leuchars, Fife; and one from Harden's Hill, Duns, Berwickshire,¹ which measures externally as much as 7 inches in diameter and $1\frac{1}{2}$ inch in thickness, the perforation being $2\frac{1}{2}$ inches across. In the Grierson Museum, Thornhill, Dumfriesshire, there is a ring, $1\frac{1}{2}$ inch in diameter, from Lochar Moss, Dumfriesshire. Another, found at Blackburn, Liddesdale, Roxburghshire, is in the British Museum. A large ring, apparently finished on the inside but unfinished on the periphery, and measuring about 4 inches in external diameter, is said to

¹ *Proceedings*, vol. iii. p. 363.

have been found in a cairn at Mosside, Loudoun, Ayrshire;¹ and the fragment of what has been a very fine armlet, as it is flattened on the inside, and which has had an internal diameter of about $3\frac{1}{8}$ inches, was found at Kirkmaiden, Wigtownshire.² In my own collection there is a fragment of a large ring from the farm of St Sairs, Culsalmond, Aberdeenshire, and I have seen a perfect ring of small size which was found at Gress, Lewis. Mr James E. Cree, F.S.A. Scot., has a complete ring which came from Fyvie, Aberdeenshire, and part of an armlet from Birse, Aberdeenshire, which is said to have been found under a cairn. There is the record of a jet ring found in a cist at Craigiehall.³ With the exception of the last ring and of the two reputedly found in cairns, these were all casual finds with no accompanying relics to indicate their period.

A considerable number of rings of various types have been found on inhabited sites, in forts, brochs, crannogs, and other places occupied during the Early Iron Age.

The results of the excavations carried on by the Society during the last two summers on Traprain Law are invaluable to students of the prehistoric archæology of Scotland. Not only has the harvest of finds been rich, but from the associated and dateable Roman relics, recovered from the same clearly defined strata, it has been possible to narrow down the approximate dates which had been previously assigned to various classes of native Scottish antiquities. Another excavation, carried on simultaneously with our own, in the vitrified fort of Dunagoil, in the island of Bute, by the Marquess of Bute, has also given gratifying results in this direction, although as at Traprain the site has not been exhausted. About thirty fragments of large rings, one complete ring, circular in section and measuring $\frac{19}{32}$ inch in diameter internally, a complete flat ring and half of another of oval section too large for a finger-ring and too small for an armlet, were found at Traprain. The perfect flat ring came from the highest level of occupation, dating, say, from the fourth to the fifth century; while the armlets came mostly from the lowest level, dating from the latter part of the first to the end of the second century or thereby. The rings are all plain except one, which is of semicircular section, and has slight parallel grooves on and following the circumference, crossed at right angles by incised lines. The great majority of the large rings are armlets, as they are flattened on the inside.

The small hoard of ornaments found at Cairnhill, Monquhitter, Aber-

¹ *Arch. Coll. of Ayr and Wigton*, vol. i. p. 63, fig. 7.

² *Arch. Coll. of Ayr and Galloway*, vol. v. p. 35, fig. 28.

³ *Proceedings*, vol. xxxvii. p. 318.

deenshire, and preserved in the National Museum, contained a jet ring as well as various objects of vitreous paste, and an intaglio. The period of these relics is clearly demonstrated: the intaglio points to Romano-British times; the two large beads in material resemble the fragment of the schmelze glass armlet from Traprain; and the two small imperforate glass balls are similar, except for a slight variation in colour, to one also found at Traprain.

At Dunagoil fort the relic bed is of considerable depth, but owing to the activities of rabbits it has got so mixed up that it has been found impossible to trace any stratification. The relics are believed to indicate a pre-Roman occupation probably going back a century before the beginning of the Christian era. More than eighty fragments of rings of lignite of various sizes have been recovered,¹ amongst them being two portions of an ornamented armlet showing three grooves running spiral fashion round the circumference, and one fragment of another with an incised line round the periphery crossed by short transverse lines like the Traprain example; both rings are of semicircular section.

The fort on Castle Law, Abernethy, Perth, which, like the forts at Castle Law, Forgan-denny, 6 miles distant, and at Burghead, Morayshire, has the stone wall strengthened by tie-beams of oak, produced a large plain ring of round section, $1\frac{3}{4}$ inch in diameter externally (fig. 8), and a portion of an armlet "ornamented on both sides with a cable pattern, worked from a division in the middle to the border on each margin, the interior surface of the ring being cut flat, and the exterior semi-rounded."² The only other object of jet from the excavations on this site was a wedge-shaped piece of cannel coal, 5 inches in length, and coming to a point about an inch in width, which had apparently been used in rubbing or polishing. Few other relics were found in this fort, but a bronze fibula of pre-Roman La Tène type was recovered, which may be taken to indicate a period of occupation earlier than that yet exposed on Traprain, and approximating more to that of Dunagoil. Besides, the use of wood in the construction of the walls also points this way, as Cæsar mentions that this method of construction was adopted in some of the Gaulish forts.



Fig. 8. Jet Ring, Castle Law, Abernethy.

¹ *Buteshire Nat. Hist. Trans.*, vol. viii. p. 70, and vol. ix., in press.

² *Proceedings*, vol. xxxiii. p. 30.

Five portions of large rings and a fragment of an unfinished ring were found in the fort at Dunadd, Argyllshire,¹ which furnished evidence of an occupation later than Traprain, and a fragment of jet in the vitrified fort at Duntroon, barely 3 miles to the north-west.²

Jet rings have been found in many Scottish crannogs. Portions of four large rings, from 2 to 3 inches internal diameter, and a small bit of a black substance like a jet button, were recovered from the Lochlee crannog, Ayrshire.³ From the Lochspouts crannog in the same county came a perfect ring, $1\frac{1}{4}$ inch external diameter, portions of two other rings considerably larger, half of a small ring, of circular section and $\frac{1}{2}$ -inch internal diameter, and several pieces of lignite showing tool-marks.⁴ A very fine ring, $1\frac{3}{4}$ inch internal diameter, and portions of two large rings were got in the crannog in Barhapple Loch;⁵ a ring, $1\frac{5}{16}$ inch external diameter, another, $1\frac{3}{8}$ inch external diameter, and a fragment of a large ring with a small perforation through one end, in the Airieoulund crannog;⁶ portions of two rings in a crannog in the Black Loch of Myreton;⁷ a ring, $1\frac{1}{4}$ inch external diameter, in the Barlockhart crannog;⁸ and an unfinished ring in Dowalton Loch crannog,—all in Wigtownshire.⁹ From the Ashgrove crannog, Ayrshire, a roughly shaped ring, $2\frac{1}{4}$ inches external diameter, was recovered;¹⁰ from the crannog at Buston, also in Ayrshire, fragments of three armlets;¹¹ and from the crannog in Lochan Dughail, Argyll, half of another measuring $3\frac{1}{2}$ inches in diameter externally.¹²

Crannogs are not nearly so numerous in England, but in the extensive lake village at Glastonbury, in Somersetshire, which was doubtless occupied during the first century B.C., only one object of jet, a ring not perfectly circular, and perforated eccentrically, measuring $1\frac{3}{8}$ inch in external diameter, was found, although many wheel-turned armlets of Kimmeridge shale were recovered.¹³

The list of jet ornaments found in brochs is a short one: three pieces of shale, which are discussed later (fig. 10, Nos. 2, 5, and 7), and a fragment of a large flat ring of the same material, partially made, and measuring about $5\frac{1}{4}$ inches in diameter externally, $2\frac{1}{4}$ inches internally, and $\frac{5}{16}$ inch in thickness (fig. 10, No. 10), were found in the broch of Carn Liath, Dunrobin, Sutherland; part of an armlet and a complete ring, $1\frac{1}{8}$ inch in diameter, in Keiss broch, Caithness; a portion of a ring in

¹ *Proceedings*, vol. xxxix. p. 315.

² Munro, *Ancient Scottish Lake-Dwellings*, p. 138.

³ *Arch. Coll. of Ayr and Galloway*, vol. v. pp. 116 and 120.

⁴ *Ibid.*, vol. v. p. 115.

⁵ *Arch. Coll. of Ayr and Galloway*, vol. vii. p. 33.

⁶ *Ibid.*, vol. vii. p. 58; and John Smith, *Prehistoric Man in Ayrshire*, p. 51, fig. 130.

⁷ Munro, *Ancient Scottish Lake-Dwellings*, p. 232.

⁸ *The Glastonbury Lake Village*, p. 261, fig. 55.

⁹ *Ibid.*, vol. xxxix. p. 280.

¹⁰ *Ibid.*, p. 174.

¹¹ *Proceedings*, vol. xxiii. p. 214.

¹² *Ibid.*, vol. v. p. 103.

¹³ *Proceedings*, vol. xxxvii. p. 219.

Edin's Hall brooch, Berwickshire; and a fragment of another in the brooch of Ousdale, Caithness. Part of a ring was found in a mound near Burrian, North Ronaldshay, Orkney. In the Elgin Museum there is a piece of an armlet from a brooch near Dunrobin.

The only pieces of jet that I know of from earth-houses are a fragment of a small ring which was found in one at Garrylochdrach, Vallay Strand, North Uist, and part of an armlet found by Mr A. O. Curle in a hut-circle with conjoined earth-house, in the Strath of Kildonan, Sutherland. On the ancient inhabited site on the Ghegan Rock, near Seacliff, East Lothian, where a Late Celtic comb and some Roman pottery were found, half of a jet finger-ring was also recovered.¹

In the Scottish Roman forts so far examined very few relics of jet have been discovered. Not a single ring of this material was got at Newstead, which was so productive of personal ornaments. The Camelon station gave only one armlet of jet, although other decorative objects were found in considerable numbers.² Part of an armlet was found at Birrenswark,³ and half of one was recovered at Bar Hill.⁴ None is recorded from Rough Castle, Castlecary, Lyne, Ardoch, Birrens, or Cappuck.

When rings which were obviously worn on the finger or arm are eliminated, there remains a considerable residue which must have been displayed in some other manner. The rings of flat, oval section, as well as those of circular section and of a size unsuitable for wearing in these fashions, were not unlikely worn suspended from the neck. Some of them are of small size, like the two flat examples from Traprain, and the ring of circular section from Huntly Castle, but a few are much larger. A good example of this class, measuring $1\frac{5}{8}$ inch in diameter externally and $\frac{7}{8}$ inch across the perforation, was found among the cists unearthed at the Culdee Chapel, St Andrews,⁵ where other relics belonging to Christian times were recovered. Across the ring is a shallow groove evidently worn by a cord from which it had been suspended. A ring apparently of the same class is noted by Sir John Evans from one of the ancient circular habitations at Ty Mawr, Holyhead Island, Wales.⁶ It is not stated whether it is of jet or another kind of stone, but it measures $1\frac{5}{8}$ inch in diameter and has a notch cut across the ring. In my own collection is a fine massive jet ring of pointed oval section, the sharp point projecting outwards, which was found at Kintore, Aberdeenshire (fig. 10, No. 6). It measures $2\frac{2}{3}$ inches in diameter externally, $1\frac{1}{8}$ inch across the orifice, and $\frac{3}{4}$ inch in thickness.

¹ *Proceedings*, vol. viii. p. 358.

² *Ibid.*, vol. xxxv. p. 397.

³ *Ibid.*, vol. xxxiii. p. 247.

⁴ *Ibid.*, vol. xl. p. 493.

⁵ *Proceedings*, vol. xliii. pp. 411 and 412.

⁶ *Ancient Stone Implements*, p. 466, fig. 385.

Two shallow grooves encircle the ring transversely on opposite sides, not exactly diametrically, as if from these the ring had been suspended by two cords.

With the exception of these last three, none of the rings, outside those evidently worn on the finger or arm, give any indication as to how they were worn, or whether they were worn singly or in greater numbers. Perhaps they were also suspended from the neck like the large rings of glass found in France in graves of La Tène II. period (300 to 100 B.C.), which had been worn suspended from bronze neck torcs. Two sets of three of these rings, measuring from $1\frac{3}{4}$ to $2\frac{1}{2}$ inches external diameter, and fixed by a wire loop to torcs, were found in women's graves in that country.¹

A few jet rings are said to have been found in Scottish cairns, which might be taken to indicate a Bronze Age date for some of these objects, but as a rule the record of these discoveries is unsatisfactory, and simply states that they were found in a cairn. There is no evidence that they were contained in the sepulchral deposit. One from Mosside, Loudoun, Ayrshire, has been mentioned, as also one from Inchinnan, Renfrewshire, and another from Birse, Aberdeenshire. In the National Collection there is a fragment of one, $1\frac{1}{2}$ inch in diameter, which was found with four pebbles in a grave near the earth-house at Cairnconan, Forfarshire. This grave may have belonged to the Early Iron Age, as pebbles have been found in a burial deposit, believed to have belonged to that period, at Tarland, Aberdeenshire.² However, one complete armlet of lignite and fragments of three others were discovered in the large hoard of Late Bronze Age weapons and other objects found at Heathery Burn Cave, Durham.³

Three large bone rings of circular section, fashioned by hand, and closely resembling many of those made of jet, are worthy of notice; but if we are to judge by one of these examples, which measures $2\frac{1}{2}$ inches internal diameter and $\frac{1}{2}$ inch thick, they are later in date than the jet rings, as it was found in a Viking grave in Orkney.⁴ The two others were found under a flat stone, which was dislodged by the plough, on the farm of Braehead, Belhelvie, Aberdeenshire, in a field that once had been covered by a peat moss. One of the rings was broken by the finder to see what it was made of, and the other, which measures $2\frac{3}{8}$ inches internal diameter and $\frac{7}{16}$ inch thick, is in my possession. Small rings of bone were also made, as a complete example and part of another were found in the Lochlee crannog in Ayrshire;⁵ and part of

¹ Déchelette, *Manuel d'Archéologie Préhistorique*, vol. ii. part iii., p. 1333, fig. 578.

² *Proceedings*, vol. xlix. p. 203.

³ *Archæologia*, vol. liv. p. 106.

⁴ *Proceedings*, vol. xxxviii. p. 562.

⁵ *Arch. Coll. of Ayr and Wigton*, vol. ii. p. 77.

another, which fits the finger, in Mr Mann's collection, came from Wigtownshire.

While the principal use to which jet was put in Scotland during the Early Iron Age was the manufacture of rings, other objects were fashioned of this material, but they do not number very many in the aggregate, and do not exhibit a great variety of types.

In the lowest level at Traprain a rather thick discoid bead, as well as a small, rectangular, casket-shaped bead, the lower half with sides and ends converging slightly, the top forming a flattened rectangular pyramid, and perforated transversely by two holes to keep the bead in position, were recovered (fig. 9, No. 1). Mr Cree has a jet bead found at Slains, Aberdeenshire, and another, very roughly made, from Kintore in the same county. Quite an un-

common example, found on Tents Muir, Fife, is now in the Dundee Museum. It is barrel-shaped, but instead of being of round section, the surface is ground into seven longitudinal, flat surfaces running obliquely. From the condition of the exterior of the bead there is no doubt of its antiquity. Amongst the numerous objects of jet found at Traprain were the oval head of a jet pin, flattened on the lower side, and with a hole drilled partly through it for the fixing (fig. 9, No. 2), and a globular object flattened on one side, with the lower half broken off obliquely, which may also have been a pin-head. Half of another was picked up on the site a few years ago. The complete pin-head came from the highest level. These objects may be compared with the four balls of shale flattened on the under side, showing the remains of an iron pin inserted in the centre of the flattened side, which were found at Broomend, near Inverurie, Aberdeenshire, with a Late Celtic terret-ring of the variety with two slots underneath for the insertion of the strap affixing it to the harness. This style of terret seems to be earlier than those from Traprain and Romano-British sites, which were probably inserted in a slit in the harness. Its ornamentation betrays an earlier date, as it evidently belongs to the best period of Late Celtic art, while the designs on those of Romano-British times show signs of degeneration. The associations of the Broomend and Traprain pin-heads seem to indicate that their use extended over a considerable part of the Early Iron Age.

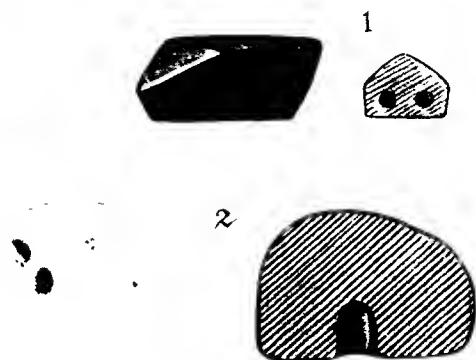


Fig. 9. Traprain Bead and Pin-head.

An irregular cube of shale, measuring about 2 inches in thickness, and roughly cut to its present shape, found at Traprain, would easily have been fashioned into a pin-head of the type described.

Several years ago a small rectangular block of shale, measuring $1\frac{1}{8}$ inch by $\frac{3}{4}$ inch by $\frac{3}{8}$ inch, bearing a drilled hollow on the top and bottom, was found on Traprain (fig. 10, No. 1). It has been suggested that its purpose might have been to steady the upper end of the spindle of a bow-drill. Two somewhat similar objects of quadrate shape, from Glenluce, are in Mr Mann's collection: the first, measuring $\frac{3}{8}$ inch by $\frac{5}{8}$ inch by $\frac{1}{4}$ inch, bears a hollow on one face only, and there is a slight groove encircling one-half of the depression, as if the sharp end of a rotating spindle had jumped out of the socket (fig. 10, No. 3); the second, measuring $\frac{31}{32}$ inch by $\frac{13}{16}$ inch by $\frac{5}{16}$ inch, has hollows on both sides, which have met, forming an aperture, about $\frac{1}{16}$ inch in diameter, in which the fragment of a small iron pin remains (fig. 10, No. 4). This piece of jet never formed the head of an ornamental pin, and the occurrence of the small piece of iron, which does not quite fill the perforation, is not incompatible with the idea suggested as to the use of these objects. Another of these objects, with a hollow on one side only, was found at Dunagoil. In the Esquimaux cord-drill the upper end of the spindle was steadied by a piece of wood, with a hollow on the under side, which, however, was held by the teeth so that both hands were free to manipulate the cord.¹

Whorls were occasionally made of jet, but it was not a favourite material, perhaps because of its want of weight. Some whorl-like objects have also been found, which may have been used as beads or for some other purpose, as the perforations differ from those on the usual Scottish whorl. A whorl found at Nethy Bridge, Inverness-shire, is in the collection of Mr Cree; two, $1\frac{5}{8}$ inch and $1\frac{1}{4}$ inch in diameter respectively, were found at Dunagoil,² and two of shale, as well as a disc of the same material, at the Roman station at Camelon,³ while seemingly other two, although the perforation in each is smaller than the average, were recovered from the Buston crannog.⁴ There is a jet whorl, $1\frac{9}{16}$ inch in diameter, from Tents Muir, in the Albert Institute, Dundee, and another of "shalestone," $1\frac{1}{2}$ inch in diameter, from the site of a lake-dwelling on Loch Rutton, Kirkeudbrightshire, in the museum at Maxwellton.⁵ One object found at Traprain, and another at Melgund, Forfarshire, may also have been whorls; but two said to have been found in a cist at Gartly, Aberdeenshire, and one in my own collection (fig. 10, No. 8), measuring

¹ *Proceedings*, vol. xiv. p. 239.

² *Proceedings*, vol. xxxv. p. 412.

³ *Proceedings*, vol. xxii. p. 413.

⁴ *Buteshire Nat. Hist. Soc. Trans.*, vol. viii. p. 71.

⁵ *Ancient Scottish Lake-Dwellings*, p. 232.

$1\frac{3}{16}$ inch in diameter, from the Home Farm of Straloch, Aberdeenshire,

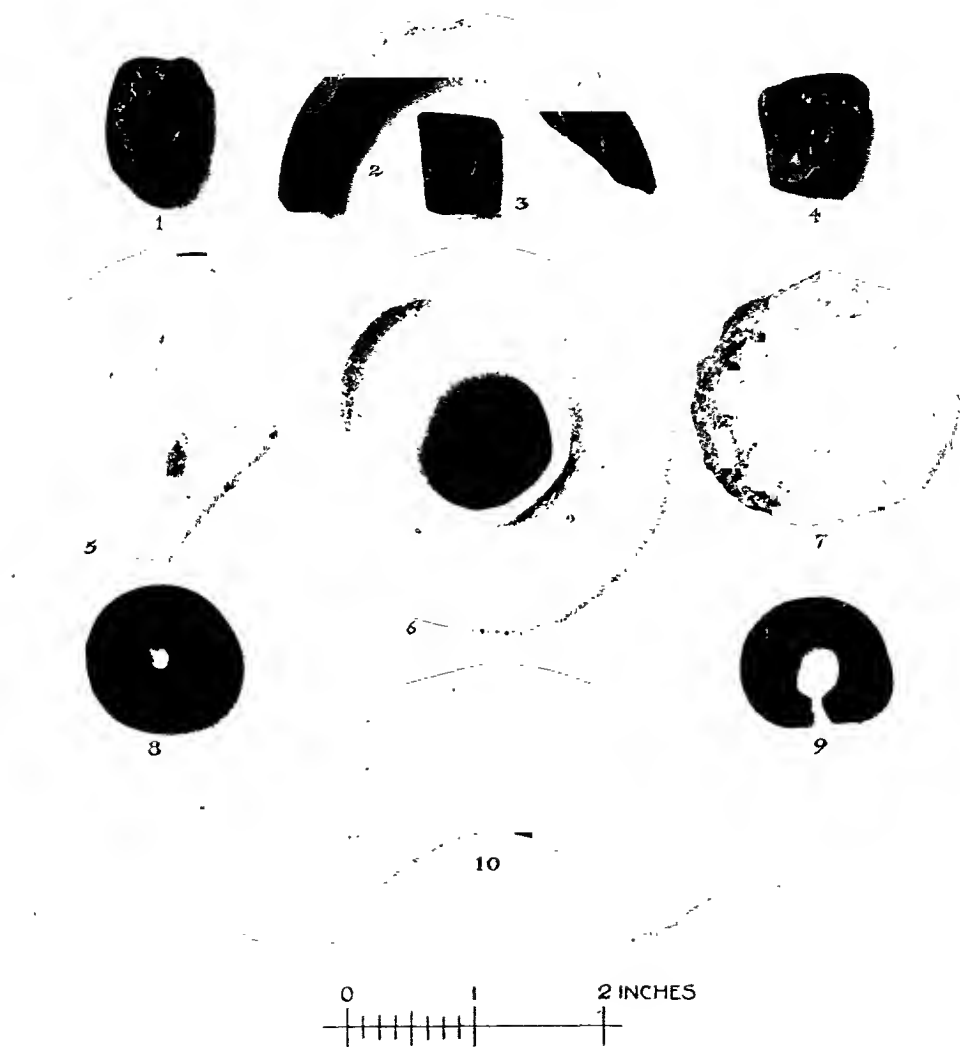


Fig. 10. Objects of Jet found in Scotland.

look more like beads. This idea is strengthened by a specimen belonging to Mr Cree, found at Fyvie, Aberdeenshire, which differs only from the

last in being of smaller size. A peculiar disc found with some fragments of partially made rings in a fort at Seamill, West Kilbride, Ayrshire, roughly fashioned and measuring about 1 inch in diameter, has a small rectangular perforation in the centre.¹

Thin circular discs with a minute hole in the centre have been found at Glenluce, and one measuring barely 1 inch in diameter and $\frac{1}{8}$ inch in thickness was discovered at Dunagoil.

In the National Museum there is a thin, curved pendant of circular section, tapering towards a rounded point, and perforated for suspension at the thick end (fig. 11), which was found on the Glenluce Sands, and another of the same type from the Roman fort at Newstead.² Mr Mann has a third specimen which, like the first, came from Glenluce. It has a sharper curve than the other two, and the upper end, instead of being circular like the lower part, is rectangular. Mr Mann has also an oval penannular ring of jet (fig. 10, No. 9), measuring $1\frac{1}{2}$ inch by 1 inch in diameter externally, from the same locality.

Fig. 11. Curved Pendant, Glenluce.

It is impossible to tell its period, as the penannular ring is a well-known Bronze Age type of ornament, and many a penannular brooch, which is simply a ring provided with a tongue or acus, was made in this country in Roman and much later times. Another relic in the Museum, which cannot be dated, is a flattened, horn-like object or pendant of jet, with a groove round the centre for suspension, and what looks like the figure of a minute boat with two persons in it incised on one side (fig. 12), from the farm of Broughton Knowe, Skirling, Peeblesshire.³ A carefully worked piece of jet found at Glenluce, and belonging to Mr Mann, is shaped like part of the lip of a circular, saucer-shaped object, with an external diameter of about $2\frac{1}{4}$ inches.

Buttons with a V-shaped perforation on the under side have not been found on Scottish Early Iron Age sites, but occasionally objects of metal and bone shaped like two beads stuck together or like a cylinder with rounded ends and constricted centre have been found, which are believed to have been used as buttons. Two of bronze were found at Newstead and one at Traprain. An object of this class made

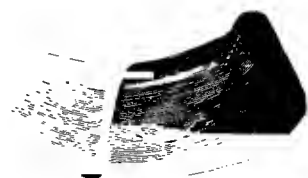


Fig. 12. Pendant with ? Boat.

¹ *Arch. Coll. Ayr and Wigton*, vol. iii. p. 62.

² James Curle, *A Roman Frontier Post*, pl. xciii. fig. 19.

³ *Proceedings*, vol. xxi. p. 193.

of bone was found on the Ghegan Rock inhabited site, another of the same material in one of the Archerfield caves near North Berwick, in the same district, and a third of horn at Newstead. The last one bears a strong resemblance to the double imperforate beads of glass which are not infrequently found in Ireland and occasionally on the Glenluce Sands. One at least of these objects, made of jet, has been found at Glenluce, but it seems rather small to have been used as a button.

There still remain to be noticed a number of jet objects found in Scotland which were found on early sites. One of the most interesting of these is a pendant found at the Lochspouts crannog.¹ It is shaped like a wheel, nearly $1\frac{1}{2}$ inch in diameter, with four flat spokes placed at right angles to each other and widening towards the extremities; a small projection on the outside of the ring opposite one of the spokes is pierced for suspension by a hole bored at right angles to the face of the object, but this is a secondary perforation, as originally the hole had been drilled transversely through the projection, and one side had scaled off. The ring and spokes are ornamented on one side by a row of small incised circles with a dot in the centre of each, bounded on either side by an incised marginal line; alternating with the circles on the ring are short incised transverse lines.

Occasionally irregularly shaped, perforated pieces of jet have been found. One rounded piece in the Montrose Museum, about $1\frac{1}{4}$ inch in diameter, is perforated towards one side; and another in my own collection from Leslie, Aberdeenshire, is flat, of polygonal shape, and perforated at one corner. Both examples have apparently been pendants, but there is no evidence regarding their probable period. A flat pear-shaped pendant, perforated at the narrow end and ornamented on both faces by zigzag and straight incised lines showing no special pattern, found in the Tappoch Broch, Stirlingshire, can be assigned to the Early Iron Age. A small D-shaped ring of jet with two small perforations for attachment on the flat side was found at Buston crannog.² At St Blane's, Bute, a thin splinter of shale, nearly $1\frac{3}{4}$ inch square, with an incised cross on one side and the letters DA on the other, was found during the excavation; and at a later time a small box, about $1\frac{1}{16}$ inch long, $\frac{3}{4}$ inch broad, and $\frac{1}{16}$ inch deep, with a groove for a sliding lid, cut out of a solid block of jet, was found at the same place.

I have not referred to the rings and other jet objects said to have been found at the Yirdies, near Carnwath, as their authenticity is doubtful, nor to the curious carved objects of shale found on the Dumbuck crannog, and the adjacent Dunbuie fort and Langbank crannog, about which so wild a controversy raged at the time of their

¹ Munro, *Ancient Scottish Lake-Dwellings*, p. 312, fig. 261.

² *Ibid.*, p. 232, fig. 248.

discovery. They still remain, as Dr Anderson said, when they were described before the Society, "in the list of things that must wait further evidence, because they contradict present experience."¹

Two uncommon objects of jet belonging to Mr Mann are a disc from Portpatrick bearing an incised design on both faces, and about one-third of what has been a very fine, massive armlet which came from Glenluce. The disc resembles one of the waste pieces found in the locality, but the edge is trimmed, and it bears a figure on the one face which may be a representation of an eye or of a crudely drawn boat with a mast, and on the other a rectangular panel, divided into seven narrow, upright compartments, each containing a marking resembling a runic letter.² A photograph of this disc was submitted to the late Sir John Rhys, but he was unable to correlate the marks with runic script. The armlet (fig. 13)

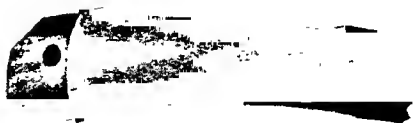


Fig. 13. Fragment of Jet Armlet found on Glenluce Sands. ($\frac{3}{8}$.)

has been over $3\frac{1}{2}$ inches in diameter internally, and the surviving part bears two holes, $\frac{1}{8}$ inch in diameter, carefully drilled through the ring $3\frac{1}{4}$ inches apart, near each of the broken ends. About $\frac{3}{16}$ inch from each hole one side of a shallow groove has been cut on the outside of the ring, after it has been

polished, as if to receive a plate of metal, possibly gold, which has been fixed to the jet by a rivet passing through the perforation. This armlet may be compared with the sections of glass armlets found at Traprain, which have been conjoined with metal bands or collars. Several other Scottish armlets bear small perforations: one, already mentioned, from the Airieouland crannog; another from Traprain, the perforation on which is formed by two converging holes, one bored from the side and the other from the interior of the ring; a third example preserved in Elgin Museum, provenance not known; a fourth, measuring $\frac{3}{4}$ inch in diameter, with two holes opposite each other, from a mound on Keiss Moor; and the last, one of the broken armlets from Tents Muir, which has a large perforation.

The latest dateable object of jet found in Scotland that I am able to trace is a circular piece 2 inches in diameter, with a roughly cut hole $\frac{3}{4}$ inch in diameter in the centre. It has the appearance of "the concave footstand of a vase," and was found at Talnotrie, Kirkcudbrightshire, in a hoard containing whorls, silver ornaments, and coins of Northumbria dating from 845 to 910 A.D.³

The methods of fashioning rings of jet during the Early Iron Age

¹ *Proceedings*, vol. xxxiv. p. 457.

² *Transactions Dumfriesshire Nat. Hist. Soc.*, 3rd series, vol. iii. p. 138.

³ *Proceedings*, vol. xlvii. p. 16.

in Scotland have been clearly demonstrated by numerous finds of specimens which are either partly made or have got broken in the course of manufacture. And these discoveries not only prove that they were fashioned in many parts of the country, but that there was at least one extensive manufacturing centre. The rings were hand-made, and so were other ornaments, such as the pin-head from Traprain (fig. 9), which is of irregular oval shape and thus could only have been fashioned by hand-cutting and polishing. In making small beads and rings only the simple processes of boring and rounding were necessary, but when the manufacture of larger rings was undertaken three distinct methods were employed to remove the central portion of the plate of raw material to form the perforation.

One process was to split a block of jet into a plate of requisite thickness, and cut or saw it into a rough quadrangular or polygonal shape. The outside corners were then cut off and the central portion was removed by digging or gouging, after which the ring was reduced to the desired thickness by filing or rubbing, and finally it was polished. This system of manufacture is very well shown in a set of ten blocks of jet found together on an old land surface on the Shewalton Sands in Ayrshire, of which three are in my possession. Each of the ten shows an advance over its neighbour in its stage of manufacture, from the rough quadrangular block, about $2\frac{1}{2}$ inches across and 1 inch thick, without any signs of attempted perforation, to the rounded disc in which the hollows dug out from either side have nearly met. These show that the trimming of the exterior and the gouging out of the hole went on concurrently. This system is also seen very clearly in a fragment of one of two unfinished rings found at Traprain. Other examples in the course of manufacture have already been mentioned in this paper, as at the fort of Dunadd and in the crannog in Dowalton Loch, and they have been found in other places. Perforated pieces of cannel coal with no attempt at shaping the exterior edge of the object have been found on the Stevenston Sands. One of these, with straight exterior edges and a large hole cut from either side so that there is a sharp ridge on the inside of the perforation, has been figured,¹ as also an irregular, pierced disc from the Ashgrove crannog.² It is impossible to say whether it was intended to make examples such as these into rings, or whether they may not have belonged to the same class of objects as the perforated stones found so plentifully in Aberdeenshire, whose purpose has probably not yet been discovered.³

¹ *Prehistoric Man in Ayrshire*, p. 41, fig. 108.

² *Ibid.*, p. 52, fig. 130; *Arch. Coll. of Ayr and Galloway*, vol. vii. p. 58.

³ *Proceedings*, vol. xxxvii. p. 166.

A rather different system of making rings was noted in specimens discovered in the excavations carried out by the late Marquess of Bute on the old ecclesiastical site at St Blane's, Bute.¹ Among the relics found there, which consisted largely of objects belonging to Early Christian times, were a portion of an armlet, a complete ring of small size, six fragments of roughly shaped rings of large size apparently in the process of manufacture, and a plate of rough shale, unshaped but with a button-shaped piece, $1\frac{1}{2}$ inch in diameter and about $\frac{1}{2}$ inch thick, removed by undercutting, and a circular hole bored in the centre of the cavity so formed. Two of the irregular button-like pieces, apparently removed from a disc like the one just described, were also found. There was another ring in the course of manufacture, showing a circular plate of shale, about $3\frac{1}{2}$ inches in diameter and $\frac{1}{2}$ inch thick, flattened on both faces and roughly rounded on the edge. In the centre was a hole, $1\frac{1}{2}$ inch in diameter, dug out from both sides, with an incised line drawn round it at a distance of $\frac{1}{2}$ inch, marking the distance to which the hole was to be cut. When completed the aperture would be about $2\frac{1}{2}$ inches in diameter.

The third method entailed much less labour in removing the central portion of the plate from which the ring was to be cut. The slab was first trimmed into a circular disc of requisite thickness and diameter, and then the core was removed by making a narrow cut at a distance from the edge suitable to the thickness of the ring. Rubbing and polishing then completed the process. Circular discs, the waste pieces from these rings, have been found in several parts of Scotland, and by many people, who apparently credited them with having been an early currency, were termed "coal money," a term which has also been applied in England to somewhat similar discs of Kimmeridge shale which were produced, not by hand, but by turning with a lathe, when making rings or armlets.

The third process of manufacture of rings is very well illustrated in three broken and discarded jet objects found in the broch of Carn Liath, Sutherland. One of these shows more than half of the original plate, which had got broken while the article was being made (fig. 10, No. 5). The outside of the ring, which would have been under $2\frac{3}{4}$ inches external diameter, had been roughly brought into shape by cutting the plate on both edges of the periphery with a sharp knife so as to leave an obtuse-angled arris in the centre, then a circular groove had been cut out about $\frac{1}{2}$ inch from the outer edge; but before this could be carried through the plate and the core removed, it had broken. The second fragment shows about half of a ring of about 3 inches external

¹ *Proceedings*, vol. xxxiv, p. 311.

diameter from which the discoid core has been removed (fig. 10, No. 2), and the third object is a discoid core (fig. 10, No. 7) almost 2 inches in diameter. The recovery of these relics is conclusive evidence that the jet ring was manufactured in Sutherland, one of the two most northerly counties on the mainland of Scotland. A very important manufacturing centre of the ring, however, was at Portpatrick in Wigtownshire, the most southerly county. Large numbers of discs, chips of jet, and fragments of rings in the rough have been found in the old churchyard there, and also in other parts of the town. At least one perfect polished ring has been found.¹ The churchyard, for the very obvious reason that it has been dug into for a considerable depth over and over again, has proved the most fruitful field for the finding of these relics, but there is no doubt that the jet workshops covered a considerable area which extended beyond the confines of the burying-ground, as waste pieces have been recovered in excavating the foundations of houses in the town. Some extraordinary stories have appeared in print regarding the association of the Portpatrick discs with human skeletons, but they seem to be quite apocryphal. There is not the slightest doubt that the churchyard occupies the site of an ancient jet factory, and as it has been in use for many centuries, the debris from the workshops has got mixed up with human remains, and so their association is purely fortuitous.

Discoid cores have been found in other parts of the country: several have been found at Whiting Bay, Arran; one at Dunadd fort; one on Stevenston Sands; one in a shell mound at West Kilbride, Ayrshire; and one in the Greater Cumbrae. The Dunadd disc measures $3\frac{1}{2}$ inches in diameter and is much above the usual size, which is usually nearer 2 inches in diameter. Three large irregular discs and a perforated oblong plate of shale were found when making the Windmillcroft Dock in Glasgow.

The occurrence of waste pieces and unfinished rings of jet in so many places shows that their manufacture was carried on over a wide area in Scotland during the Early Iron Age.

If we are to judge by discoveries from excavations carried out on Roman stations in Scotland, it will be seen that the jet ring was not so much prized by their inhabitants as by the occupants of contemporary and earlier native forts. However, some examples of beautifully ornamented armlets have been found on Roman sites in England, of which two, found in 1912 on the site of the Roman town of Wroxeter, in Shropshire, may be cited.

Ornaments of jet have been found on Early Iron Age sites not only in the north and south of Scotland, but in the northern and western

¹ *Glasgow Exhibition, 1911, Catalogue*, p. 871, No. 25.

islands. So far the numbers discovered in the south far exceed those from the north, a result possibly due as well to the more abundant supply of the raw material in the Lowlands as to the more extensive exploration in that region. If inhabited sites in the north-east were as extensively examined, possibly it might be found that there was no scarcity of these relics in those parts, as there is clear evidence that they were manufactured in the broch of Carn Liath, Sutherland.

Although it has been stated that it is impossible to tell the period of jet ornaments except by their ornamentation, I think that in the light of present knowledge we can confidently claim to be able to date the most numerous Scottish classes by their form. The necklace, button with V-shaped perforation, and beads of fusiform and flat discoid or washer shape belong to the Bronze Age; rings, including the finger-ring and bracelet, massive pin-heads and certain styles of pendants, are to be assigned to the Early Iron Age; and while globular beads are occasionally met with, they have been so seldom found that they cannot be claimed as a common prehistoric type. No mechanical contrivances, except perhaps the bow-drill for making small holes, seem to have been used in either period. There is a marked distinction between the character of the jet ornaments of the Bronze Age and of the Early Iron Age, those of the former period being more elaborate. This change was not a question of evolution. Whether it was due simply to a change of fashion or to the influx of a different race of people are points on which I do not care to hazard an opinion.

GROUP I.—SINGLE-STRING NECKLACES.

No.	Locality.	Number and Type of Beads.	Class of Burial and Associated Relics.	Where Preserved.	References.
1	Glenluce Sands, Wigtownshire.	187 discs and 1 triangular pendant.	Inside small cinerary urn.	Mr Ludovic M'L. Mann's collection.	<i>Proceedings S.A. Scot.</i> , vol. xxxvi. p. 584.
2	Dunrobin, Sutherland.	118 discs, only 6 perforated.	Cist, female skeleton and beaker urn.	Dunrobin Mus.	<i>Ibid.</i> , vol. xxxviii. p. 338.
3	Yarhouse, Caithness.	70 discs.	Cist, human remains and fragments of urn within a chambered cairn.	6 beads in Scot. Nat. Mus.	<i>Ibid.</i> , vol. vii. p. 498.
4	Brownhill, Arran, Buteshire.	14 discs.	Cist, food-vessel urn.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xxxvi. p. 122.
5	Farrochie, Stonehaven, Kincardineshire.	9 discs.	Cist beside large cairn.	"	<i>Ibid.</i> , vol. v. p. 14; <i>Archæologia Scotica</i> , vol. ii. p. 462.
6	Moraytown, Dalcross, Invernesshire.	3 small flat (discs?).	Cist, skeleton.	"	<i>Proceedings</i> , vol. xxxiv. p. 215.
7	Greenhill, Balmerino, Fife.	64 discs, 10 fusiform and 1 bone.	Cairn, food-vessel urns and human remains.	At Mrs Scrymgeour-Wedderburn's.	<i>Ibid.</i> , vol. xxxvi. p. 646.

JET NECKLACE, BURGIE LODGE FARM, MORAYSHIRE. 239

GROUP I.—SINGLE-STRING NECKLACES—*continued.*

No.	Locality.	Number and Type of Beads.	Class of Burial and Associated Relics.	Where Preserved.	References.
8	Scalpsie, Bute.	1 fusiform.	Cist in cairn, food-vessel urn and portion of bronze pin.	Scot. Nat. Mus.	<i>Proceedings</i> , vol. xxxviii. p. 56.
9	Ardiffney, Cruden, Aberdeenshire.	12 large oval beads of jet and 4 of amber.	Small tumulus, two skeletons, two beakers urns, flint axe, seven arrow-heads, flint knife, stone bracer.	Arbuthnott Mus., Peterhead.	<i>Ibid.</i> , vol. xxii. p. 366.
10	Lanarkshire.	6 of jet and 3 of amber, shaped like small axe-hammers.	Tumulus.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xvi. p. 149.

GROUP II.—CRESCENTIC NECKLACES.

No.	Locality.	Number of Beads.	Number of Plates.	Lower Pendant.	Class of Burial and Associated Relics.	Where Preserved.	References.
11	Torr Sgriobhaidh, Balblair, Edderton, Ross-shire.	58	5[6(4+2)]	.	Cist in cairn, flint knife.	Royal Scottish Academy.	<i>Infra</i> , p. 212.
12	Torrish, Kildonan, Ross-shire.	57	5[6(4+2)]	.	Cist in cairn, chert arrow-head and flint spear-head or knife.	Dunrobin Mus.	<i>Proceedings</i> , vol. viii. p. 408.
13	Fordoun House, Kincardineshire.	23	5[8(4+2+2)]	..	Cist.	Montrose Mus.	<i>Infra</i> , p. 212.
14	Old House of Assynt, Ross-shire.	22	7[?(?+4+2)]	.	Cist in cairn, human remains and urn.	Scot. Nat. Mus.	<i>Archæologia Scot.</i> , vol. iii. p. 49. pl. v.
15	Pitreuchie, Forfarshire.	24	4[5(3+2)]	.	Cist, along with necklace No. 24, etc.	..	<i>Proceedings</i> , vol. xli. p. 65.
16	Balcalk, Tealing, Forfarshire.	140	6(4+2)	Triangular.	Cist, skeleton, food-vessel urn, flint knife, and fragment of bronze pin.	..	<i>Ibid.</i> , vol. xiv. p. 260.
17	Dam of Burgie, Rafford, Morayshire.	128 (120)	6(4+2)	Ring with 3 perforations.	Cist, skeleton and urn.	A triangular terminal plate in Forres Mus.	<i>Ibid.</i> , vol. xii. p. 298.
18	Burgie Lodge, Rafford, Morayshire.	107	6(4+2)	Triangular.	Cist, skeleton and food-vessel urn.	Elgin Mus.	<i>Infra</i> , p. 203.
19	Pitkenney, Aberlemno, Forfarshire.	104	6(4+2)	..	Cist, urn.	.	<i>Proceedings</i> , vol. iii. p. 78.
20	Mount Stuart, Bute.	100	6(4+2)	..	Cist, female skeleton and food-vessel urn.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xxxviii. p. 64.
21	Law Park, St Andrews, Fife.	79	6(4+2)	..	Cist, skeleton and drinking-cup urn.	..	<i>Ibid.</i> , vol. xli. p. 404.
22	Lunan Head, near Forfar.	78	6(4+2)	Oval (lost).	Cist, skeleton.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xii. p. 290.
23	Hill of Roseisle, Morayshire.	64	?(?+2)	..	Cist, skeleton.	...	<i>Ibid.</i> , vol. iii. p. 46.

The number of beads in the third column is doubtful in one or two cases, as different records do not agree. In the next column the surviving number of plates is first indicated; the figures in the square brackets show the original number of the plates, and those in the curved brackets indicate first the original number of rhomboidal plates, then triangular terminals.

GROUP II.—CRESCENTIC NECKLACES—*continued*.

No.	Locality.	Number of Beads.	Number of Plates.	Lower Pendant.	Class of Burial and Associated Relics.	Where Preserved.	References.
24	Pitreuchie, Forfarshire.	57	6(4+2)	Triangular.	Cist, skeleton, food-vessel urn, and necklace No. 15.	Scot. Nat. Mus.	<i>Proceedings</i> , vol. xli. p. 65.
25	Melfort, Argyllshire.	45	8(6+2)	"	Cist, skeleton, two bronze armlets.	British Mus.	<i>Ibid.</i> , vol. xix. p. 134.
26	Tayfield, Balgay, Newport, Fife.	43	7[8(4+2+2)]	"	Cist, food-vessel urn.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. viii. p. 411.
27	Bogheadly, Fetteresso, Kincardineshire.	37	6(4+2)	"	Cinerary urn.	"	<i>Ibid.</i> , vol. vi. p. 88.
28	Glebe, Kilmartin, Argyllshire.	26	2	.	Cist in cairn, food-vessel urn.	...	<i>Ibid.</i> , vol. vi. p. 340.
29	Tormore, Arran.	21	1	.	Cist, fragment of urn.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xlv. p. 220.
30	Blinnmill, Rothie-Norman, Aberdeenshire.	14 jet and 2 amber.	8(6+2)	Triangular.	Cist in cairn, skeleton, food-vessel urn, and fragment of bronze.	"	<i>Ibid.</i> , vol. vi. pp. 203 and 217.
31	Boghead, Kintore, Aberdeenshire.	8	4	.	.	"	<i>Ibid.</i> , vol. xii. p. 294.
32	Newmill, Alves, Morayshire.	8	4	Triangular.	...	Elgin Mus.	<i>Ibid.</i> , vol. xii. p. 299.
33	Houston, Renfrewshire.	.	.	.	Cist in cairn.	"	<i>Old Statistical Account</i> , vol. i. p. 330.
34	Branstone Urquhart, Morayshire.	.	.	.	Cist, skeleton.	Elgin Mus.	<i>Proceedings</i> , vol. ii. p. 531.
35	Kellas, Murroes, Forfarshire.	1	1	.	Cist, food-vessel urn.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xxiv. p. 9.
36	Earlston, Roxburghshire.	.	2	.	Cairn.	Hawick Mus.	<i>Ibid.</i> , vol. xxii. p. 395.
37	Culbin Sands, Morayshire.	.	1	..	.	Scot. Nat. Mus.	<i>Ibid.</i> , vol. xxv. p. 510.
38	Forfarshire?	.	1	.	.	Montrose Mus.	<i>Supra</i> , p. 213.
39	"?	.	1	.	.	"	"
40	Dunan Beg, Lam-lash, Arran.	1	.	.	Cist in cairn, beaker urn.	Scot. Nat. Mus.	<i>Proceedings</i> , vol. xliii. p. 347.

III.

AN ACCOUNT OF THE RUINS OF THE BROCH OF DUN TELVE, NEAR
GLENELG, EXCAVATED BY H.M. OFFICE OF WORKS IN 1914.
BY ALEXANDER O. CURLE, F.S.A. SCOT., DIRECTOR OF THE MUSEUM.

The brochs of Dun Telve and Dun Troddan, more commonly known as the brochs of Glenelg, from the adjacent hamlet on the shore of the Sound of Sleat, are situated in Glen Beg, a valley running east and west, and parallel to Glen More, at the mouth of which lies the village. Dun Telve is about two miles distant from the shore, while Dun Troddan lies a quarter mile or thereby farther up the glen on a prominence projecting from the mountain side. Both brochs are now under the charge of H.M. Office of Works.

Glenbeg is a narrow glen with steep mountain slopes on each flank, breaking off here and there by the side of the burn flowing through it into areas of haugh-land. From one of these, and close by the bank of the burn, rise the ruins of Dun Telve (fig. 1).

About the year 1720 Alexander Gordon visited both these brochs, and has left us a description of them in his *Itinerarium Septentrionale*, accompanied by a view in front elevation of Dun Troddan, and in sectional elevation of Dun Telve. The former of the brochs then stood erect to a height of 33 feet presumably above the ground-level, with its circumference almost complete, except for a gap in the upper part of the wall at one side; but Dun Telve was even at that time in a very ruinous state with only about one-half of its wall remaining. Pennant paid them a visit in 1772 in the course of his voyage to the Hebrides, and the description which he has left of Dun Telve is worth quoting in part for the purpose of comparing the state of the ruins at that date with their condition in 1914, after a lapse of 142 years. It runs: "The more entire side appears of a most elegant taper form; the present height is thirty feet six inches; but in 1722 some Goth purloined from the top seven feet and a half, under pretence of applying the material to certain public buildings. By the appearance of some ruins that now lie at the base, and which have fallen off since that time, I believe three feet more may be added to the height, which will make the whole about forty-one." At the present day the highest elevation is 33 feet 6 inches, the increase on Pennant's figure being possibly due to the removal of the debris and accumulated soil at the base of the wall, and it is thus satisfactory to note that in height at least there has been no notable diminution since his time. Of the broch itself (for there are remains

of outbuildings, to be noted hereafter), only about one-third of the periphery except at the ground-level remains (fig. 2). True to its type, it has formed at base, as seen on the plan (fig. 3), an almost complete circle, with a diameter over all of 60 feet; a slight flattening on the outer periphery, noticeable on the plan towards the south-east, being probably due to dilapidation. The entrance to the interior is from the west by a passage through the wall 13 feet 6 inches in length. At

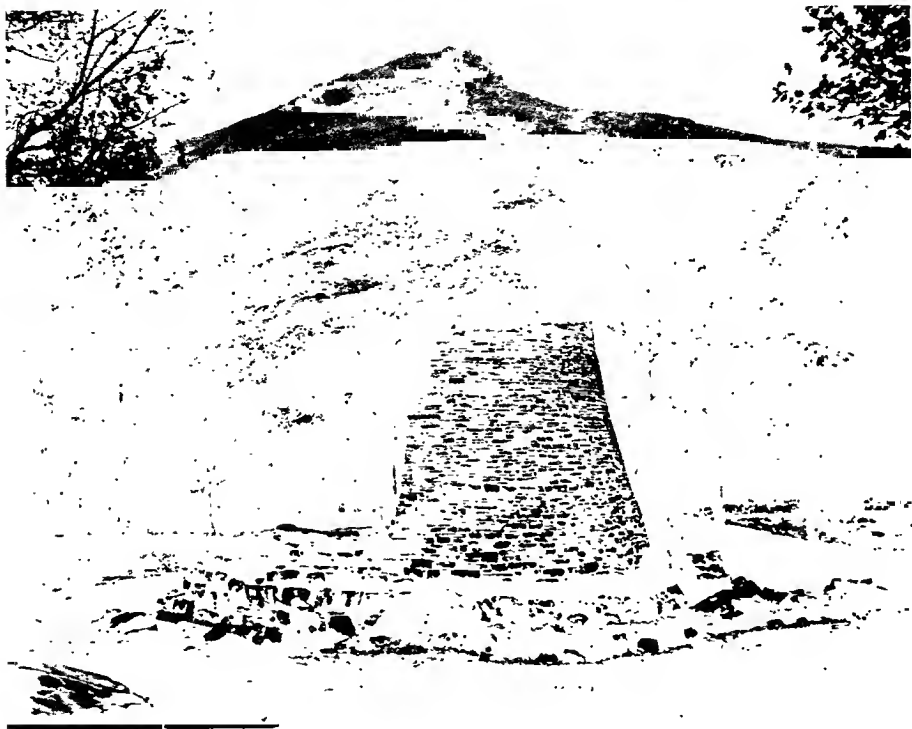


Fig. 1. Broch of Dun Telve—exterior view.

the exterior the entrance has a width of 3 feet 3 inches. This width with an increase of only a few inches the passage maintains for 4 feet 9 inches, where slabs set in the wall opposite to each other form checks for a door, and immediately contract it to 3 feet. Behind the door the passage has a width of 4 feet 4 inches, and inward from this point it gradually expands to 5 feet 3 inches, slightly contracting again to 4 feet 8 inches at the inner opening. Behind the door-checks on either side occur the usual square sockets in the side walls for the bar to hold the door. On the right side passing inwards, at a distance of

2 feet 6 inches from the position of the door, is the entrance, 3 feet wide, to the guard-chamber shown on the plan, extending in the thickness of the wall for a length of 18 feet and attaining a greatest breadth of 5 feet. With the exception of a portion of one flagstone, the roof of the entrance passage has entirely disappeared. The interior courtyard has a diameter of 32 feet. At a quarter of the way round the circumference to the left is an entrance 3 feet 3 inches wide, giving



Fig. 2. Broch of Dun Telve—interior view.

access on the right to the stair, still existing for seventeen steps, and on the left to a chamber some 9 feet in length. As seen in the sectional plans (fig. 4) and view (fig. 5), there runs around the interior at an average height of 6 feet 6 inches above ground-level a ledge formed of single stones firmly built into the wall and projecting some 6 inches. This is continued along one side only of the entrance passage as if for the ends of the roofing slabs to rest on. At a height of 29 feet 6 inches above ground a similar ledge occurs, shown on the sectional plans (fig. 4). The use of such ledges or scarcements, of frequent occurrence in brochs,

: BROCH DUN TELVE .
: GLENBEG, INVERNESS-SHIRE :

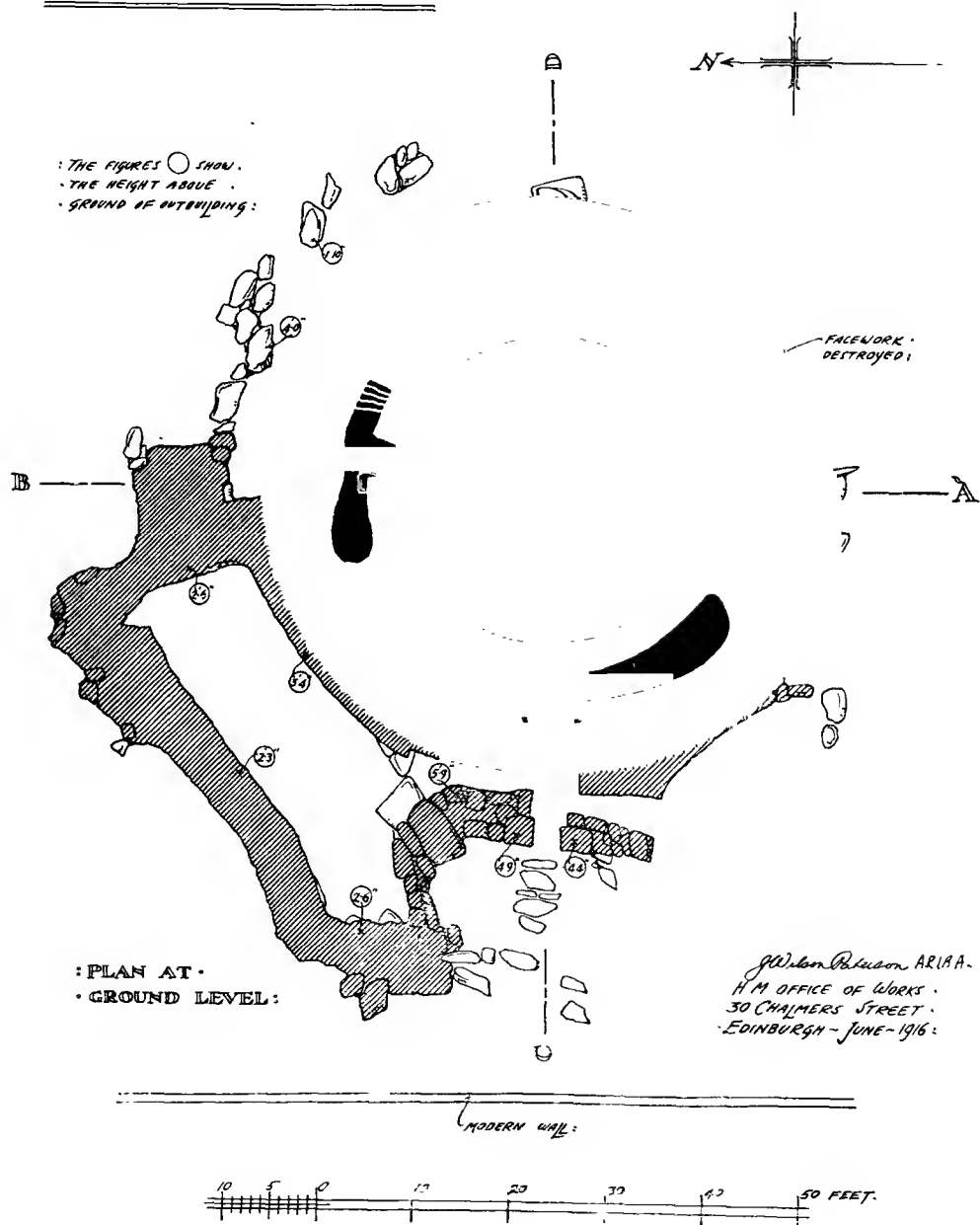
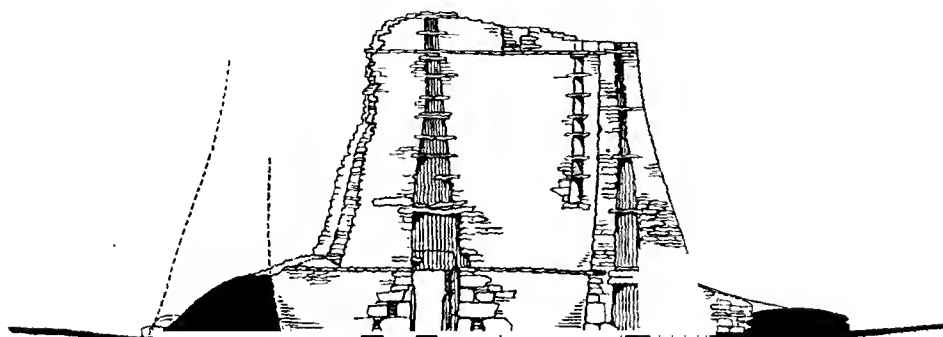


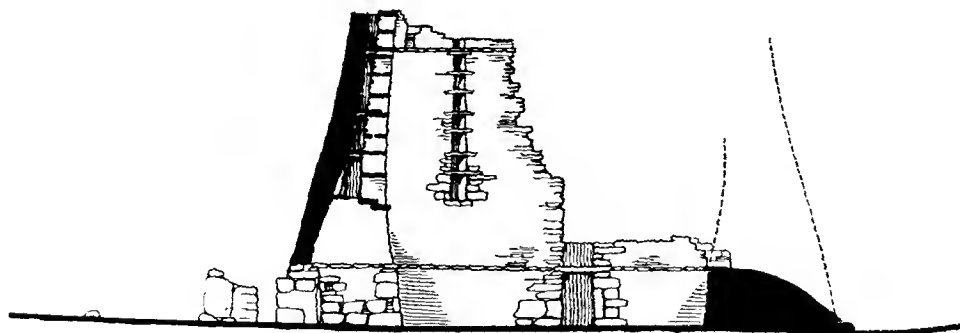
Fig. 3.

THE RUINS OF THE BROCH OF DUN TELVE, NEAR GLENELG. 245

: BROCH DUN TELVE :
 : GLENBEG, INVERNESS-SHIRE :



SECTION ON LINE A.B.



SECTION ON LINE C.D.

John Brown, A.R.S.A.
 : N. M. OFFICE OF WORKS :
 : 30 CHALMERS STREET :
 : EDINBURGH - JUNE - 1916 :

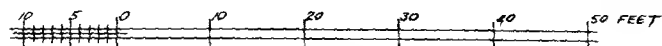


Fig. 1.

has never been satisfactorily explained. It is conceivable that where one occurs at a comparatively low level it may have supported the roof of an arcade surrounding the courtyard, an arrangement which characterises the galleried dwellings or "wags" in Caithness; but where, as in this case, a ledge is found at a height of nearly 30 feet, such an hypothesis is clearly untenable. The natural explanation would be that it was intended to support a roof, but if this was the case there must

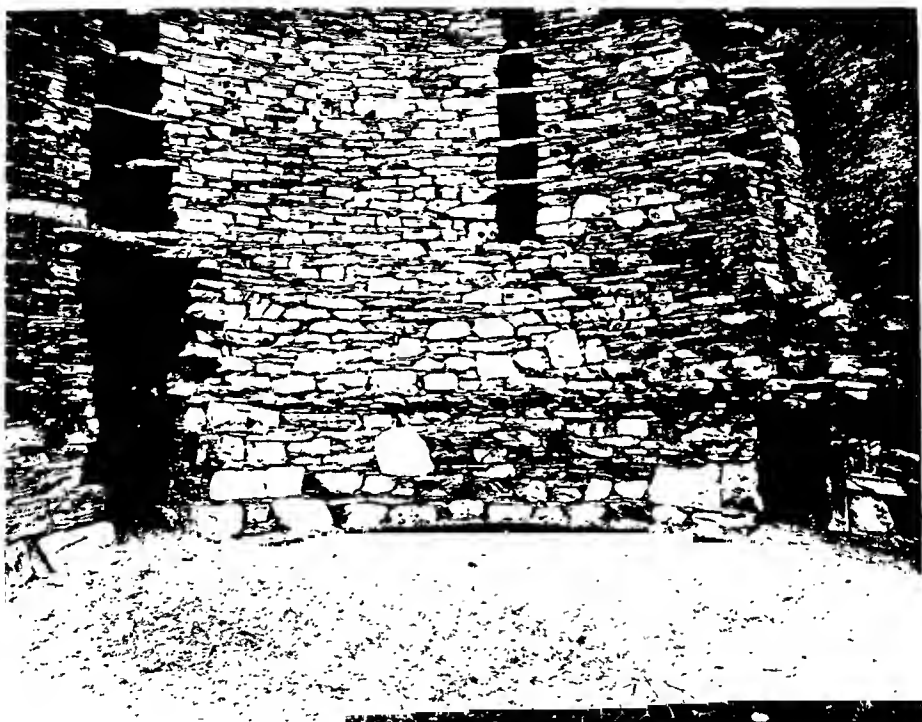


Fig. 5. Broch of Dun Telve—Interior, showing Ledge.

have been some opening in the centre to allow light to penetrate to the courtyard below.

In the elevation of the structure, so far as remaining, are four galleries and a portion of a fifth, shown on the sectional plans—the lowest commencing at the level of the top of the doorway and of the lower ledge. Each is separated in the usual manner by single slabs forming the roof and floor of the respective galleries. The lowest gallery has a height of from 5 to 6 feet, a breadth of 2 feet 6 inches on floor and of little more than 2 feet at roof; the masonry on the

walls is neat and carefully finished. It extends towards the main entrance but is not carried over it, terminating against a wall of solid masonry some 2 feet 6 inches thick. At 15 feet back from this termination, at E on the plan at first gallery level (fig. 6), the gallery is purposely blocked with an arrangement of large slabs built into either wall, crossing it horizontally, and placed sufficiently close to prevent any passage between them. In this way there has been formed a cell or chamber on the first floor. No light opens into it from the interior of the broch, but in this respect it would be no less gloomy than the usual chambers in the lower part of such buildings. There are two entrances into it, both through the roof, or floor of the gallery above, at the spots marked F and F on the plan at second gallery level (fig. 6). These seem to be original. It will be observed that one is directly over the cross-slabs forming the end of the chamber, so that these could be used as steps by which to ascend or descend into it. The gallery at this level is carried over the top of the entrance passage in the small portion of the broch that remains. In this section of it the flooring slabs have been almost entirely removed, but below the level where they existed may be seen, as shown on the plan (fig. 6), the stepped flags which have formed the roof of the guard-chamber.

On the second floor the gallery continues without interruption from end to end through the existing portion of the wall. It has a height of about 5 feet 6 inches, a breadth at floor-level of little over 2 feet, and at roof of about 1 foot 6 inches. As is the case in the lower gallery, the masonry along the sides is smooth and neat, as shown in the view (fig. 7). The galleries above, two in number, with a portion of a third, are of a different character. They are so narrow, with a width of a little over 1 foot, that they could never have been intended for inhabitation nor even for passage, an inference that is strengthened by the rough condition of the masonry on the wall-faces.

In the remaining segment of the broch there are two vertical rows of window-like apertures in the inner face of the wall, one rising above the doorway and commencing at the level of the floor of the first gallery, and the other some 15 feet round to the north of it, commencing at the level of the floor of the gallery above (see sectional plans, fig. 4, and interior view, fig. 2). In the first of these the openings are wider than in the other, starting above the doorway with a width of nearly 5 feet, but above the level of the roof of the second gallery they diminish rapidly to 1 foot 3 inches at the top. The lowest opening is now co-extensive in height with the lowest gallery, but originally this space was probably divided by a cross-slab. The opening reaching from roof to floor of the second gallery has been divided into two, at

· BROCH ·
 · DUN TELVE ·
 · GLENBEG,
· INVERNESS-SHIRE ·

· PLAN AT SECOND ·
 · GALLERY LEVEL ·

----- DOTTED LINES ·
SHOW PLAN AT TOP :

F - SHOWS ACCESS TO ·
 GALLERY BELOW ·
E - SHOWS STONE TIES :

· PLAN AT FIRST ·
 · GALLERY LEVEL ·

John Parker, ARCHA
 · H. M. OFFICE OF WORKS ·
 · 30 CHAMBERS STREET ·
 EDINBURGH - JUNE - 1916.

10 5 0 10 20 30 40 50 FEET.

Fig. 6.

a height of about 2 feet 6 inches, by a lintel, and similarly upwards the apertures have an average height of some 2 feet. In the second row the openings are smaller and more uniform in size, with breadth of about 1 foot 10 inches at the bottom of the lowest, diminishing to



Fig. 7. Dun Telve—view showing Galleries in section.

1 foot 5 inches at the uppermost, and a height similarly varying from 3 feet to somewhat less than 2 feet. In addition, there is evidence of another row of openings rising from the top of the entrance to the stairway, and of a fourth which commenced at the higher ledge half way between the two remaining rows. In the latter position there

are now the remains of a single aperture, but in Gordon's plan this is shown complete, with two additional openings rising above it.

The exact intention of the galleries in brochs and of the apertures which open into them has been the subject of some speculation. It has been assumed that the galleries were used for inhabitation, and that the apertures were for light, but such explanations do not quite explain all the peculiarities of the case. In Dun Telve only the two lower galleries were of sufficient width to admit of their occupation by human beings, and the careful manner in which the wall faces of both were finished smoothly seems to indicate some such intention; but so narrow were the upper galleries, and so rough was the building of their side walls, that it is quite evident the use of the latter as places of occupation, or even as passages, was not contemplated. The most plausible theory to account for the construction of the upper galleries is that which attributes them to the necessity for reducing the weight on the roofing slabs of the second gallery and minimising the thrust on the lower gallery walls. Thus the flags which divide them horizontally were the necessary bond ties, and served the purpose likewise of working platforms in the process of construction. Presuming that the lower apertures were intended to give light to the lower galleries, the continuance of the openings upwards in the wall was in like manner to relieve the lower lintel from a dangerous weight of material, which could only have been met otherwise by the use of heavier lintels than were easily obtainable with the means at the disposal of the builders.

To the outside of Dun Telve are considerable remains of outbuildings. Some 8 feet back from the entrance stand two upright blocks of stone (fig. 8) 4 feet 9 inches and 4 feet 4 inches high respectively, and 3 feet apart, with the remains of building in rear of them and apparently marking the entrance to an outer passage. From them stretch outwards, with a slight trend towards the north from the axial line of the entrance to the broch, a row of paving slabs. Proceeding inwards, passages diverge to left and right, the former leading into a large oblong enclosure, and the latter also apparently leading to an enclosure of which only a portion of the wall adjacent to the broch remains. To the eastward of the end of the larger enclosure a number of large stones, shown on the plan (fig. 3), appear to be the remains of a wall. Such enclosures about the entrance to a broch are not unusual, and when of the dimensions of the complete enclosure here, some 43 feet by 12 feet, they were probably intended for protection of the flocks and herds of the indwellers.

The relics found were not numerous but are of interest. There were three stone cups, all handled and formed from micaceous schist (fig. 9).

THE RUINS OF THE BROCH OF DUN TELVE, NEAR GLENELG. 251

No. 1 measures $2\frac{1}{8}$ inches in diameter over all, with a handle $1\frac{3}{4}$ inch in breadth and $1\frac{3}{16}$ inch in length; No. 2, $3\frac{3}{8}$ inches in diameter over all, with a short handle $1\frac{3}{8}$ inch in breadth and $1\frac{1}{8}$ inch in length; No. 3, $6\frac{1}{4}$ inches in length over all, $3\frac{1}{2}$ inches in breadth, with a handle, which



Fig. 8. Dun Telve—view towards the Entrance from outside.

is flat and stumpy, $1\frac{7}{8}$ inch in breadth and $1\frac{5}{8}$ inch in thickness. Other brochs which have yielded stone cups are Carn Liath, near Golspie, Cinn Trolia, at Kintradwell, and the broch at Stoer Head, all in Sutherlandshire. Vessels of stone have here been much in vogue, for in addition to the foregoing there were three segments of two round dishes

fashioned from micaceous schist. The larger, to which two fragments belonged, had been a comparatively shallow bowl without ornamentation of any sort, and having an estimated diameter of $10\frac{1}{4}$ inches; the smaller, represented by the other fragment, was probably also a part of a bowl-like vessel, and had a diameter of only $5\frac{1}{8}$ inches. On the outside, $\frac{3}{8}$ inch below the lip, occurs a convex moulding $\frac{5}{16}$ inch in breadth, the inter-

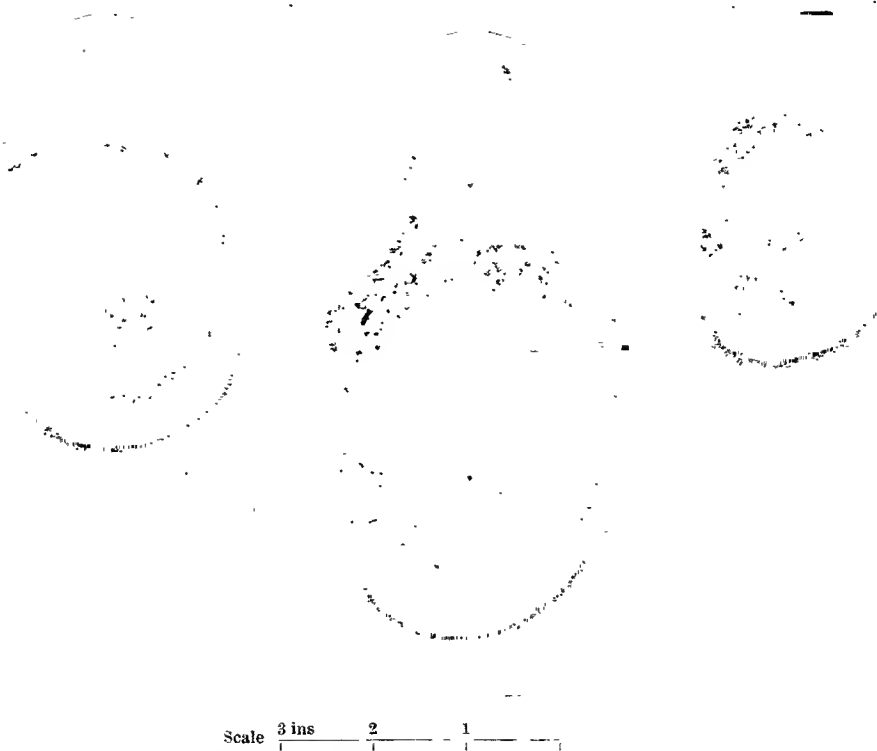
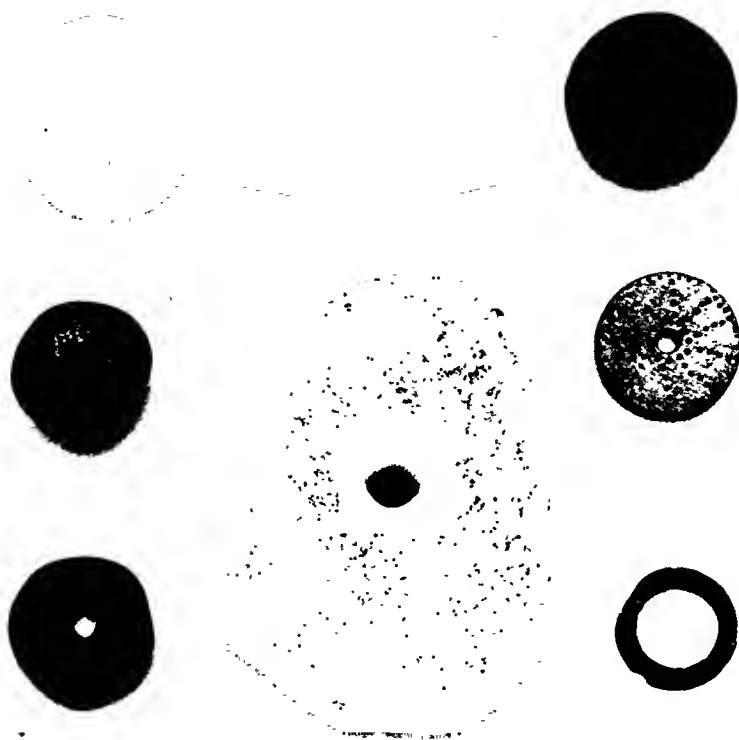


Fig. 9. Cups of Micaceous Schist from Dun Telve.

vening space being ornamented with a series of chevrons, a style of ornamentation not uncommon on stone cups.

Nine fragments of pottery were found, representing five different vessels: the base of a cooking pot with a diameter of $3\frac{3}{4}$ inches, parts of the side of the same vessel or of one similar, and two fragments of the mouths of what appear to have been globular pots with somewhat broad everted lips. One of these shows a single chevron incised on it immediately below the lip. All these pieces of pottery are hand-made, and

resemble the sherds found in kitchen middens in the Western Isles. The only other piece of pot is more problematical. It is a fragment (too small to indicate dimensions) of the side of a vessel, peculiar in that it is wheel-made. It has a distinct gloss or polish on its outer surface, which is



Scale $\frac{3}{4}$ ins. $\frac{2}{4}$ $\frac{1}{4}$

Fig. 10. Whorls, Sharpening-stone, etc., from Dun Telve.

of a brown tint, while the inside is dark grey. Adhering to this fragment are many particles of mica, and as some of these also appear to be in the body, it promotes a suggestion of manufacture in the neighbourhood where micaceous schists prevail.

I do not think this fragment is Roman: it may be early mediæval; it does not appear to be late.

There were found five whorls (fig. 10). One of them, of steatite, measuring $1\frac{7}{16}$ inch in diameter, is decorated similarly on both sides with a row of small punctulations round the edge, and nine radial lines of similar markings proceeding from the centre. Another, almost spherical in form, is made of sandstone, and measures $1\frac{5}{16}$ inch in diameter at right angles to the perforation, and $1\frac{1}{8}$ inch through it. One of schist is lenticular in shape, with an incised line round the circumference, and measures $1\frac{11}{16}$ inch in diameter; the remaining two are discoid and of schist, measuring $1\frac{7}{16}$ inch and $1\frac{3}{16}$ inch in diameter. Additional relics consisted of a perforated disc of micaceous schist $4\frac{5}{8}$ inches by $3\frac{1}{2}$ inches in diameter; an oblong sharpening-stone of clay-slate, bevelled on the edges, $2\frac{1}{8}$ inches in length by $1\frac{7}{16}$ inches in breadth; two pieces of iron slag; a small ring of bronze, plano-convex in section, $1\frac{1}{4}$ inches in diameter; an oblong flake of claystone which has been used as a sharpening-stone; a portion of a hone of micaceous schist, and two pounders showing slight abrasion at one end.

With the exception of the last four relics, a portion of the larger bowl-like vessel of schist, the largest of the stone cups, and four duplicate pieces of pottery, all the relics have been presented to the National Museum by Lady Scott, to whom the broch belongs.

Seven quern stones and two broken pieces were found, all belonging to circular rotary querns.

It remains to acknowledge my indebtedness to H.M. Office of Works for enabling me to describe the broch by rendering me every assistance in the shape of plans and photographs; to Mr C. R. Peers, the Inspector of Ancient Monuments, for his good offices; to Mr J. Wilson Paterson, Architect in charge of Scottish Monuments, who prepared the plans; and to Mr J. Gillespie, of the Office of Works, who took the excellent photographs used as illustrations.

MONDAY, 10th April 1916.

THE HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

Before commencing the ordinary business of the Meeting the Chairman referred to the death of Mr David Douglas, Publisher, who had acted as Treasurer of the Society from 1871-1882, and moved that the Meeting record an expression of their regret at his death and of sympathy with his family.

A Ballot having been taken, the following were duly elected:—

Fellows.

FRANCIS MAXWELL CHRYSTAL, M.B., Ship Surgeon. 5 Lauriston Park.
ERIC CROSBY TOWNSEND CLOUSTON. Stratton Park. Biggleswade.
Bedfordshire.
EDWYN SEYMOUR REID TAIT. Lerwick.

The following Donations were exhibited and thanks voted to the Donors:—

1. By JAMES S. RICHARDSON, F.S.A. Scot.

Fragments of Pottery found in December 1915, during the formation of military entrenchments, at Bantaskine, Falkirk:—Portion of the rim and a piece of the side of a vessel of late Celtic Pottery of exceptionally fine quality, showing an approximate diameter of 10 inches for the mouth of the vessel when complete. The ware is black and thin, and has a slightly polished surface; the lip is everted, with a convex moulding on the outside. Also five portions of very coarse hand-made Pottery, including one small piece with an everted lip. The latter ware is thick and friable, and shows a considerable immixture of quartzite pebbles.

2. By JAMES M'QUISTIN, Farmer, Balneil, New Luce, Wigtownshire, through the Rev. R. S. G. ANDERSON, Ivy Cottage, New Luce.

Objects found with a partially incinerated interment on the farm of Balneil in January 1916. See subsequent communication by A. O. Curle, Director of the Museum, p. 302.

3. By JOHN COPLAND, Solicitor, Banks Terrace, Sheerness, Kent.

Long, single-cross Sterling of Alexander III., found in making military trenches at Sheerness.

4. By JOHN S. PITMAN, W.S., 22 Douglas Crescent.

Lottery Tickets (sixteen in all) issued in Edinburgh, for State Lotteries for the years 1776, 1777, 1785, and 1813, with relative circulars and letter dated 13th November 1777.

5. By THE DEPUTY-MASTER OF THE ROYAL MINT.

Bronze Coronation Medal of King William IV., and Silver Coronation Medal of Queen Victoria.

6. By the Rev. R. S. G. ANDERSON, Ivy Cottage, New Luce.

Roman melon-shaped Bead of blue vitreous paste, somewhat irregularly formed, with longest diameter of 2.1 cm. measured at right angles to the perforation, found at Galdenoch Farm, New Luce, Wigtownshire.

7. By R. COLTMAN CLEPHAN, F.S.A., F.S.A.Scot., the Author.

Armour Notes: with some Account of the Tournament. Pamphlet.

8. By HIS MAJESTY'S GOVERNMENT.

Calendar of State Papers relating to Scotland and Mary, Queen of Scots. 1547-1603. Edited by William K. Boyd, F.R.Hist. Soc. Edinburgh, 1915.

9. By THOMAS JOHNSON WESTROPP, 115 Strand Road, Sandymount, Dublin, the Author.

On Certain Typical Earthworks and Ring-Walls in County Limerick. Reprint from the *Proceedings of the Royal Irish Academy*, vol. xxxiii., Section C, No. 2. Dublin, 1916. Pamphlet.

10. By THE SUPERINTENDENT OF ARCHÆOLOGY, Hyderabad State.

Hyderabad Archæological Series. No. 1. The New Asokan Edict of Maski. Calcutta, 1915. Pamphlet, 4to.

The following Communications were read:—

I.

NOTE ON THE EARLY USE OF AQUA VITÆ IN SCOTLAND.

By R. SCOTT-MONCRIEFF, SECRETARY.

When first my attention was drawn to this subject a year or two ago, I was in hopes that I might be able to throw some further light on the question as to when whisky or its lineal ancestor became a common drink in this country. From what I had read, it seemed to me certain that a grain distilled spirit of some sort was in fairly common use in the northern part of Europe by the end of the fifteenth century, and in Ireland by the beginning of the sixteenth century. I therefore thought it quite likely that such a spirit might also have been in common use in Scotland by 1500. I may say at once that I have found no evidence to support such a belief, and that I leave the question as to when whisky became a common drink of our ancestors in practically the same position in which I found it. At the same time, I have collected in my researches a certain amount of information which is not without interest, and which may be of use to others who in the future may look into this matter. Hence this paper.

In the first place, I must define what liquor is covered in this paper by the word "whisky." Although the House of Lords a few years ago spent many weeks in deciding this question, I do not intend to detain you more than a few seconds over it. "Whisky" for my present purpose means any spirit distilled in the British Isles directly or indirectly from home-grown grain, and that whether termed "whisky" or "Usquebagh," whence the word is derived, or "aqua vitæ," its Latin equivalent. It may be taken that the first two terms always represent a grain distilled liquor. In regard to the last term, however, it must be remembered that though "aqua vitæ" may mean "whisky," it does not necessarily do so, as it was a generic term applied to any spirit, and that it is always a matter of proof or of more or less probable conjecture what spirit the term is used to denote. In countries where the vine does not grow, and where the term is used to denote a common drink, it may be assumed safely that the liquor meant was grain distilled.

Unlike brewing, the knowledge of distillation was unknown to the Greeks and Romans except in a very rudimentary form,¹ and it seems probable that we owe its discovery, as we owe that of the mariner's

¹ "Sea water can be rendered potable by distillation; wine and other liquids can be submitted to the same process. After they have been converted into humid vapours they return to liquids" (Aristotle, lib. ii. ch. ii.).

compass and of gunpowder, to that weird and learned race, the Chinese. In the same way as modern astronomy owes its origin to the vain hopes of our forefathers to foretell the future from the study of the stars, our modern chemistry is indebted to the alchemists of old striving, equally vainly, to discover the elixir of life.

In the hunt for this secret the Chinese are said to have embarked several centuries before the Christian era; and it was while endeavouring to find the philosopher's stone that the disciples of the philosopher Lao-Kuin, who flourished about six hundred years before Christ, boasted of having discovered a liquor which conferred immortality, and which old writers assume to have been obtained by distillation.¹ The results of their efforts did in a way confer eternal life on some of the drinkers, for three of their kings, according to Du Halde, "put on immortality after a draught of their elixir of life."

It is a long cry, however, from China to Europe, and it is not until we find the Moors in Spain that we begin to be on firm ground. As is well known, the Moslem races were amongst the earliest of outside nations to trade with China. It is therefore but natural to find that the Saracens, who in the eighth, ninth, and tenth centuries were pre-eminently the intellectual race of the world, should have seized on the chemical knowledge of the Chinese, and should have advanced it in a way that a conservative nation like the Chinese could never have done. It was they who are said to have invented, and they certainly named, the alembic, and their discoveries in chemistry were of the first importance. Universities and libraries were established throughout their wide dominions for the encouragement of learning, none of which were more famous than those of their Andalusian kingdom in Spain. Geber, who is said to have been born in Seville of Saracen origin, wrote a treatise on the subject of distillation certainly not later than the ninth century; and in 780 Almokanna, the veiled prophet, is reported to have drowned himself in *aqua fortis*, which, if true, denotes the existence of a considerable quantity of spirit. To Spain in the thirteenth century came Michael Scott² in pursuit of knowledge, and amongst other places studied at Toledo. No doubt he was primarily a mathematician and astrologer, but we are told that he had a knowledge of Arabic, and he must have been versed in chemistry, for he was one of those alchemists employed by Edward I. of England in transmuting, or perhaps one should say trying to transmute, baser metals into gold in order to furnish funds for an expedition to the Holy Land. Is it too fanciful to suggest that Michael Scott knew the properties of distillation, and that

¹ The liquor was termed "Tchang sing go" (*vide* Du Halde's *History*).

² See "Sketches of Early Scottish Alchemists," by John Small, vol. xi. p. 179 of our *Proceedings*.

consequently we may claim that the art was known to at least one man in Scotland by the middle of the thirteenth century?

Be that as it may, we may safely assume that the early distillers in Scotland distilled not from malt or native grain, but from wine or wine lees. It is with distillation from these that all the early treatises deal; and this is but natural, for the art had travelled from the land of the grape where the juice of the grape was the common and inexpensive drink. In countries, however, where ale and beer were the native drinks, and where wine was an imported and comparatively expensive luxury, both analogy and economy would drive the alchemist comparatively soon to experiment with native material. Curiously enough, we have no mention of the manufacture or use of spirits in Scotland in its form of spirits of wine. Our native drink bursts upon us in 1494-95 as a fully developed malt distilled liquor. The reference to this is as follows, and occurs in the Exchequer Rolls for that year (vol. x. p. 487):—"To Friar John Cor, by order of the King, to make aqua vitæ VIII bolls of malt."¹ This entry is the first of a series of nineteen occurring between 1495 and 1512 in the Exchequer Rolls and in the Accounts of the Lord High Treasurer. They are referred to in the first volume of the Lord Treasurer's Accounts (Introduction, p. ccxiii), as follows:—"On two occasions a payment was made by King James IV. to a barber in Dundee who brought him² aqua vitæ, and the word occurs frequently in the Treasurer's Accounts some years later in connection with the pretended researches in alchemy of John Damien, Abbot of Tungland. It is true that a much less antiquity has generally been assigned to the distillation of whisky in Scotland, but there is no reason to doubt that this was the liquor here referred to, for in 1494-95 the Exchequer Rolls show a delivery to Friar John Cor of eight bolls of malt to make aqua vitæ. That it was not largely manufactured nor in general use at that time is obvious from the comparative rarity of its occurrence, as well as from the manner in which, on the occasions referred to, it was furnished to the King. It was probably reckoned rather among drugs than among articles of ordinary consumption."

With the opinions expressed in the above passage I agree. I would, however, like to point out that whereas the statement that whisky or its legal progenitor was being made in Scotland by the end of the

¹ "Et per liberacionem factam fratri Johanni Cor per preceptum compotorum rotulitoris, ut asserit, de mandato domini regis ad faciendum aquavite infra hoc compotum viij bolle brasii" (Lord High Treasurer's Accounts, vol. i. p. 176).

² It was the King who was in Dundee; the barber may have come from Edinburgh. The barbers of Dundee enjoyed no monopoly, nor did the barbers of any other town in Scotland so far as I can ascertain. It will be noticed that when the King was at Stirling aqua vitæ had to be sent from Edinburgh.

fifteenth century rests on positive evidence, the statement that it was not in general use rests on negative evidence, which, however probable, can hardly be regarded as final. I may therefore perhaps be allowed to refer to the entries and to this negative evidence in rather greater detail.

In the first place, it must be remembered that whisky might easily be in common use and yet no reference found to it in either the Exchequer Rolls or in the Lord High Treasurer's Accounts, neither of which took cognisance of the King's drink bills. That entries relating to whisky are found in these records is due entirely, with one medicinal exception, to the idiosyncrasies of the reigning monarch James IV., and with his death they cease to occur. Even this exception may owe its origin to his peculiar tastes. It reads: "31 Decr. 1507. Item payit to William Foular, potingair, for potingary to the King and Quene, distillation of waters, aqua vite and potingary buiks in Inglis fra the 17th day of Decr. 1506 to this day, lib 128, 2s. 10d." The purchase of "potingary buiks" by a monarch who was willing to pay one of his servants for "leve to lat him blud" him conveys a suspicion of experiment. Of the remaining eighteen entries, fourteen are in relation to the King's experiments in chemistry, although one of them has a misleadingly convivial smack about it, especially when taken in conjunction with the two succeeding entries: "Item to ane man brocht aqua vite and glasses fra Edinburgh to Strivelin, 4ls." "Item that nicht to the King and the Lard of Myrtoun to play at the cartis." "Item that nicht to the King to play at the cartis with the Abbot of Tungland, lib 6, 12s." These entries conjure up a cosy little scene; but from the mention of the Abbot of Tungland¹ I rather imagine the glasses were retorts and not tumblers.

The four remaining entries deal with the use of aqua vitæ in the process of making gunpowder, and there is another later entry (1540) in the Treasurer's Accounts relating to the supply of aqua vitæ for the manufacture of fireworks. I am unfortunately not a good enough chemist to be able to appreciate the use to which the aqua vitæ was put; but we have been hearing a great deal lately about the use of spirits in the manufacture of high explosives, and it strikes me as a curious and interesting fact that Scotland should have been using spirits apparently for a similar purpose four hundred years ago.

There is another point in connection with these entries which is worth noticing, especially as it brings us into touch with the only other reference of that time to aqua vitæ which I have seen. The point is that out of the few names given of those supplying aqua vitæ, three are

¹ John Damien, Abbot of Tungland, with whom the King conducted his chemical experiments.

barbers. This fact acquires peculiar significance when we find that in the Seal of Cause granted by the City of Edinburgh in 1505, and confirmed by the King in 1506, under which the Guild of Surgeon Barbers was created, a monopoly of the manufacture of aqua vitæ was conferred on these crafts in the following terms:—"That na persons man nor woman within this Burgh make nor sell any aqua vitæ within the samen except the said Masters Brethren and Freemen of the said crafts under pain of escheat of the samen but favours." Although the monopoly seems to have been confirmed on the crafts jointly, after references to it show that it was the barbers who made use of it.

I may point out *en passant* that as there can be no doubt that the knowledge of distillation originally lay in the Church with its Friar Cors and Father Damiens, so the granting of this monopoly is but another indication of the unfortunate connection between the Church and the barbers which did so much to retard the development of surgery, a matter which I have not time to go into, although I have had occasion to refer to it in a previous paper. In the present case, however, there does not seem to be the same reason for devolution. In Italy there flourished at this time a religious order¹ the members of which came to be known as the Aqua Vitæ fathers, a sobriquet which can hardly have been acquired without some foundation of fact; and there seems to be no reason why such an order should not have existed in Scotland. The granting of the monopoly is at least an indication that the right to make aqua vitæ was even then of some value.

The entries to which I have referred are the only references so far as I am aware dealing with aqua vitæ, and none of them indicate its use as a drink. We look in vain for such references in the few household books of that period extant, nor do we find any in the ecclesiastical account books of the time. It may be that in Scotland, as in Ireland, aqua vitæ was the drink of the poor, which would account for this absence of reference in books dealing with the menage of the wealthy; but this would not account for the fact that there is no mention of it in the records² of the Edinburgh Town Council, which almost annually set forth the prices to be charged for wine, beer, ale and malt. If aqua vitæ was in common use, the silence of our City Records in regard to it must be due to its having been removed from the city's jurisdiction through the monopoly already referred to.

Contemporary historians are equally silent. Even Major, who was a Scotsman, and who was always anxious to maintain his theory that what a country lacked in one thing it was compensated for in another,

¹ The order of Jesuati, founded 1360, became very secularised, and dissolved in 1668.

² These are the only City Records which go far enough back to be of use.

makes no mention of it. He had to admit that Scotland did not grow grapes and consequently could not make wine, but he maintains she was amply compensated by the quality of the ale which she produced. "No one," he writes, "who is accustomed to this beverage will prefer another wine; it keeps the bowels open, it is nourishing, and it quenches thirst"; and he gives a detailed account of its manufacture. Surely if aqua vitæ had been in common use he would have made some mention of that also.

So much for the negative evidence, which seems to me very strong. On the other hand, it must be distinctly remembered that if we judge by other countries there is nothing inherently absurd in maintaining that spirits were in common use in Scotland by the beginning of the sixteenth century. I find it stated in a book, *In Vino Veritas*, by André L. Simon, that liquids fermented from grain appear to have been first distilled on a large scale in the fifteenth century, and it was due to this fact that the consumption of spirits "rapidly became more general, particularly so in Northern Europe, where wine was comparatively expensive and out of reach of the majority of the people." In support of this statement M. Simon refers to the publication of a treatise by Michel Schreik in 1483, and of a poem published at Bamberg in 1493, both of which clearly show that the use of alcohol in Germany had by that time ceased to be restricted to medicinal purposes. He also quotes in support of his opinion a decree of the Municipality of Nuremberg made in 1496 forbidding the "sale of distilled waters on Sundays and other holidays in private houses as well as by druggists and other merchants in their shops, in the market, in the street or elsewhere, so as to put a stop to their abuse and excessive consumption."

In Ireland, also, spirits seem to have been in common use by the beginning of the sixteenth century, although the proof is scarcely so direct. Campion in his *History of Ireland*, which was published in 1571, writes: "The inhabitants (especially new come) are subject to distillations, rhumes and fluxes for remedy whereof they use an ordinary drink of aqua vitæ." This would indicate a more or less medicinal use of alcohol; but in another passage he states that "the natives—mark you, natives—in haste and hunger they squeeze out the blood of raw flesh and ask no more dressing thereto, the rest boyleth in their stomaches with aqua vitæ which they swill in after such a surfeite by quarts and pottles." So much for Irish drinking in 1570. As to earlier drinking, he refers to a famine in 1316 which was caused by the Scots soldiers under Edward Bruce having surfeited themselves "with flesh and aqua vitæ Lent long," and also to a knight who lived about 1350, and who used to serve out to his soldiers before battle "a might draught of aqua vitæ wine or old ale."

Now I do not claim that these last two extracts are evidence of the common use of spirits in Ireland in 1316 or even in 1350, but the fact that Campion was conscious of no anachronism in making such statements seems to indicate that the use of spirits was, in his day, no new thing, and that their introduction must have taken place at least prior to the birth of his associates, which, of course, carries us back to the beginning of the sixteenth century.

As a proof that aqua vitæ was known in Ireland at least a hundred years before this, and that not altogether medicinally, I would refer you to the following entry from the *Annals of Clonmacnoise*:—"A.D. 1405, Richard Magranell, Chieftain of Moyntyreolas, died at Christmas by taking a surfeit of aqua vitæ."¹ This, I believe, is the earliest authentic Irish reference to aqua vitæ.

You may, perhaps, ask what about England at this period? Well, I do not know if they distilled from grain in the fifteenth century, but certainly the art of distillation was well understood in that country by the end of that century. There is a Sloan manuscript entitled, "The Book of Quinte Essence, or the Fifth Being, that is to say man's Heaven," which is supposed to have been written about 1460, and gives receipts for distilling from wine, the fifth essence or *quinta essencia*, which is, so to speak, the common denominator of the universe, and the uses of which stretch from practically conferring immortality to killing lice. It is a curious and interesting work, from which some striking extracts could be furnished. There is at least another work of a similar character belonging to that century. Certainly by 1559, when Peter Morwyng translated Conrad Gesner's *Treasure of Evonymous*, spirits were in use as a drink in England, but whether these were distilled from wine or malt I cannot say. But let us return to Scotland.

If whisky was not a common drink in Scotland in the beginning of the sixteenth century, when did it become so? I have already referred to the fact that Major in his history published in 1521 makes no mention of aqua vitæ. Neither does Fynes Morison, writing at the end of the sixteenth century, and referring specially as he does to the drinks then in use in Scotland, mention it as a drink. After enumerating wines, he adds, "the better sort of citizens brew ale, their usual drink (which will distemper a stranger's body)." This might be held as evidence that whisky was not then in use in Scotland, but I think I can clearly prove, both from his own writing and from other sources, that whisky was in

¹ *Ulster Journal of Antiquaries*, vol. vi. There are, however, several references to the "Red Book of Ossory," which is said to have been compiled by an Irish bishop in the fourteenth century, and which contains a receipt for making aqua vitæ out of wine. Sir James Ware, amongst others, refers to this MS. in his history published in 1651. If this MS. is genuine, it would seem to contain a still earlier reference to aqua vitæ.

very general use by this time. In another passage he writes: "The inhabitants of the western parts of Scotland carry into Ireland and neighbouring places red and pickled herrings, sea coales, and aqua vitæ, with like commodities, and bring out of Ireland yarn or cowes hides or silver." Now nothing will convince me that a West Highlander confined his attentions in regard to aqua vitæ to the exporting thereof, and an Act of Parliament passed in 1579 clearly shows that long ere this he and others in Scotland were drinking whisky. The preamble of the Act is as follows:—

"Forsamekle as it apperis the victuall salbe skant this present yeir And understanding that thair is ane greit quantitie of malt consumit in the haill partis of this realm be making of aqua vitæ quhilk is ane greit occasioun of the derth within the samin." Therefore no one excepting Earls, Lords, Barons, and Gentlemen for their own use shall "mak brew or stell ony aquavitie." Another Act dealing with aqua vitæ places its common use still further back. By an Act passed in 1555 the inhabitants of the Western Burghs are allowed to furnish "bakin breid brown aill and aqua vitæ to the Ilis to bertour with other merchandice." From this last Act it would appear that if the Isles furnished Ireland with aqua vitæ in 1590, the mainland of Scotland furnished the Isles with it in 1555.

Nor was the use of whisky confined to the West. The Edinburgh Town Council Records—thanks to the monopoly granted to the barbers—show that aqua vitæ was in sufficient demand in Edinburgh in 1556 to make it worth while running the risk of fine for infringing the monopoly. On 20th March 1556 we read: "The bailies Alexander Barron and Allane Dikkesoun sittand in jugement ordains Besse Campbell to desist and ceis fra ony forthir making of aquavite within this burgh in tyme cumyng or selling of ony therein except on the market day, conform to the privelge granted to the barbers under the seill of caus without scho be admittit be thame thereto."

On 20th November 1561 there is another entry to the following effect:—

"The quhilk day in presence of ye provest baillies and counsall comperit Jhonne Weir at ye west porte and acted him self of his awn consent for Elizab Wier ye spous of Bartilmo Mene yat yai in na tyme cumyng Suld brew top or poll ony aquavite within ye fredome of yis burgh quhilk yat yai war fre with ye barbour craft under ye pane of XLs. and escheting of ye saide acquavite and Lumes quhairwith ye saim is brewin."

There is another conviction the following year and many thereafter.

From these Acts and entries it seems clear to me that whisky was

in common use as a drink in Scotland by the middle of the sixteenth century and probably a good many years earlier.

There are one or two other points in connection with this matter which are not without interest, and to which I would like to allude briefly. Fynes Morison, in his account of Ireland, draws a distinction between Irish and English aqua vitæ. He writes that the Irish drink largely of their "aqua vitæ, vulgarly called Usquebagh, which binds the belly and drieth up moisture more than our aqua vitæ yet inflameth not so much"; and in another passage he states: "The Irish aqua vitæ, vulgarly called Usquebagh, is held the best in the world of that kind, which is made also in England, but nothing so good as that which is brought out of Ireland; and the Usquebagh¹ is preferred before our aqua vitæ because the mingling of Raysons, Fennell seede and other things, mitigating the heat and making the taste pleasant, makes it lesse inflame and yet refresh the weake stomache with moderate heat and good relish." It is obvious from these entries that aqua vitæ was also by this time in common use in England, and that Irish Usquebagh was particularly appreciated. From the following fact I gather that the aqua vitæ made in the Western Isles was treated in much the same way as the Irish Usquebagh, and as it was wanted for a special and particular purpose, its selection indicates a preference for it over the ordinary aqua vitæ, such as would be produced by the barbers. On 17th January 1585, on the occasion of the Countess of Argyll wishing to send a present of aqua vitæ to Randolph, the English Ambassador, a reply was received from Neil Campbell, to whom she had written, saying that aqua vitæ could not be obtained from Bute on account of the "frost and inlaik of spyces."² I am indebted to Mr A. O. Curle for drawing my attention to the last-mentioned reference, and he has also pointed out to me that aqua vitæ occasionally formed part of the rent paid for Highland farms. In "The rentell of the Barranie of ffaskelie," which from the writing belongs to the end of the seventeenth century, the following is the rent paid for the "milln and millntown of Faskely":—

Pays yearly of silver dewty	lib 93 13 4
It. a pynt of aqua vity	lib 1 10 0
It. a lamb	0 13 4
It. a fed swyne	3 6 8

¹ The term Usquebagh, or at least Irish Usquebagh, seems to have implied spirits mingled with spices, and that until at least the end of the seventeenth century. A receipt for the making of "the best sort of Right Irish Usquebaugh" will be found in *Every Man his Own Gauger*, by "Philomath" (J. Lightbody), published about 1700. As a specimen of the deadly alcoholic concoctions which were made, see Gervase Markham's *English Housewife*, published 1615. The spirit in this case was distilled from strong ale and sack lees.

² Earl of Moray's family paper (Inventory, 973).

It. a dozen of pultrie half henns half					
capons, in all	lib 2	0	0		
and the rent for the farm of Chamer-					
nantead is silver dewty		lib 26	13	4	
It. ye presents	2	13	4		
It. a quart of aqua vitæ	3	0	0		
It. ane lamb	0	13	4		
It. three putrie	0	10	0		

Lastly, in regard to the date of the introduction of the words Usquebagh and Whisky,¹ I find the first use of the word Usquebagh in Fynes Morison's account of Ireland in the passages already quoted. That carries us back to the end of the sixteenth century. Campion, writing of aqua vitæ some twenty years earlier, does not use the word. The first use of the word Whisky of which I am aware occurs in a letter from Bailie John Stewart of Inverness to his brother-in-law Mr John M'Leod. The passage runs:—"Inverness, 28 Oct. 1736. But their a shock so terrible ought to guard you how to keep a sober regular dyet hereafter; and above all things that you forbear drinking that poisonous drink, I mean drams of brandie and whisky; for certainly your lait maladie has been fostered that way and by cold mixed with it."²

By the '45 the word Whisky was in common use. When the Prince was in Skye "he was answered that he could have no other drink but whisky or water, for there is no such thing as beer or ale of any kind to be got in all the Isle of Sky but only in gentlemen's houses, all the public houses being merely whiskie houses."

If any member knows of the earlier use of either of these words I shall be very pleased to receive the reference.

¹ The Scots Acts refer to "Cunyeak wine" in 1573, to brandy in 1673, and to rum in 1695. The word whisky is not used in the Scots Acts.

² I am indebted to Mr Francis Steuart for this reference.

II.

COLONEL GEORGE MONRO AND THE DEFENCE OF FORT WILLIAM HENRY, 1757. BY JOHN A. INGLIS, F.S.A. SCOT.

Readers of Fenimore Cooper's romance, *The Last of the Mohicans*, will remember the central incident of the story—the attack on Fort William Henry by Montcalm, the surrender of Colonel Monro's garrison after a five days' defence, and their subsequent massacre by the Indians. Cooper's account of these events is in its main outlines true to history, but his portrait of Colonel Monro is an effort of imagination; and as I have been able to identify him, it may be of interest to record all that is known of the Scottish soldier, who is associated with one of the best-known incidents in American history.

The identification arose from the discovery of a document in the Register House, Edinburgh—a simple receipt for a payment of money dated in 1729, and signed by "Alexander Monro of Auchinbowie and Captain George Monro of Brigadier Otway's Regiment of Foot, his brother-german."¹ It is known that Otway's Regiment, the 35th Foot, now the Royal Sussex, formed the nucleus of the garrison at Fort William Henry, and Captain Monro's record of service in the manuscript Army List for 1752² shows that he is the Colonel Monro who was given the command of the regiment in 1750.

Fenimore Cooper has risked a good many details about him. He has provided him with two daughters, half-sisters; he even gives a name to his second wife,—Alice Graham, "daughter of a neighbouring laird"; the other wife is said to have been a half-caste, whom he married while on service in the West Indies. Not one of these statements has any foundation; all that is accurate is that he was a Scotsman and that his name was Monro, but even that is wrongly spelt.

George Monro was the younger son of another Colonel George Monro and Margaret Bruce his wife. The father was a soldier of some distinction. He was one of the original captains in the Cameronian Regiment (26th Foot), which was raised in March 1689 from among the followers of the Covenanter, Richard Cameron. In August they were sent to garrison Dunkeld in anticipation of a descent upon the Lowlands by Claverhouse, and on the twenty-first of that month they were attacked by 5000 Highlanders under Colonel Cannon, and had to withstand furious assaults for four or five hours. In the first hour the Colonel of the Cameronians was killed and the Major wounded, so the

¹ *Register of Deeds* (Dalrymple), 18th May 1740.

² Public Record Office, London.

command fell to Captain Monro, who at length beat off the enemy, but not till his men had almost exhausted their powder, while for bullets they had to use lead stripped off the roofs of the houses and melted in little holes in the ground.¹ George Monro was promoted to be Major, and soon afterwards was put in command of an independent Company of Foot in Perthshire.² On 15th December 1691, just before the massacre of Glencoe, he was ordered to bring fifty men to Fort William,³ but there is no evidence that he took part in the massacre. He was present at the siege of Namur in 1695 as Major in Sir Charles Graham's Foot,⁴ and retired a few months later;⁵ but by 1716 he had been for some further service promoted to the rank of Colonel.⁶

He had married in June 1693 Margaret, second daughter of Robert Bruce of Auchinbowie,⁷ a property lying about four miles south of Stirling. She had no brothers, and on her father's death her elder sister, Janet, succeeded to the property; but Janet's husband, Captain William Bruce, had the misfortune in 1699 to kill another gentleman in a drunken brawl. He fled from justice, leaving his wife to cope with the debts on the property, which proved too much for her. Accordingly, in February 1702 she sold it to her brother-in-law, Major Monro,⁸ who thus became Laird of Auchinbowie.

George Monro and Margaret Bruce had two sons—Alexander, who afterwards succeeded to the property, and George, the subject of the present paper—and one daughter, Margaret, born in March 1707. The dates of the sons' births cannot be discovered, but to judge by his standing in the army George was probably born about the year 1700, when his parents were living in Ireland, at Clonfin, in County Longford.⁹

His whole military career was spent with Otway's Regiment, his commissions being dated as follows:—Lieutenant, 9th August 1718; Captain, 27th September 1727; Major, 18th August 1747; Lieut.-Colonel, 4th January 1750. The regiment was quartered in Ireland all this time, and saw no active service until early in 1756, when, on the outbreak of the Seven Years' War, they were ordered to England to be embodied on a war footing, and were then sent to Nova Scotia under General Hopson to take part in the campaign against the French Canadians. At the end of March 1757 they were ordered to occupy Fort William Henry, at the south end of Lake George, about fifty miles due north of

¹ A. Crichton, *Life of Colonel Blackadder*, p. 90.

² *Papers Illustrative of the Highlanders* (Maitland Club), p. 12.

³ *State Papers (Domestic)*, 1691-92, p. 34.

⁴ *The Scots Brigade in Holland* (Scottish History Society), i. 575.

⁵ *Carstares State Papers*, p. 266.

⁶ *General Register of Sasines*, vol. cx. fol. 56.

⁷ Marriage Contract recorded *Register of Deeds* (Durie), 12th February 1697.

⁸ *Register of Deeds* (Mackenzie), 27th February 1702.

⁹ *Register of Deeds* (Mackenzie), 23rd June 1701.

militia did not arrive soon, Monro should make the best terms he could. The letter fell into the hands of Montcalm, who kept it for several days and then sent it under a flag of truce to Monro. The aide-de-camp, Bougainville, who carried the letter, has left a journal in which he records that Monro "returned many thanks for the courtesy of our nation and protested his joy at having to do with so generous an enemy. This was his answer to the Marquis de Montcalm."

Meantime the French sappers had been working their way to the south-west corner of the lake, and having filled up the ravine with logs and fascines they continued their sap up the slope beyond and opened a trench in the garden not 250 yards from the fort. The position of the garrison was thus rendered desperate. More than 300 men had been killed or wounded; smallpox had broken out; all their heavy cannon and two of the mortars had burst and others had been put out of action by the enemy; they had made two sorties without success; the walls were already breached and an assault was imminent. They continued the defence briskly through the night of the 8th, during which the inside of the fort was set on fire by the enemy's shells, but in the morning, after a council of officers, Colonel Young was sent out to ask for terms, and a capitulation was arranged on the footing that the British troops should march out with the honours of war and be escorted to Fort Edward by 300 French regulars, upon an undertaking that they should not serve again for eighteen months. Article IX. was as follows:¹ "The Marquis de Montcalm, being willing to show Colonel Monro and the garrison under his command marks of his esteem on account of their honourable defence, gives them one piece of cannon, a six-pounder."

The garrison, with the women and children, at once evacuated the fort and moved to the entrenched camp, leaving such of the sick and wounded as could not be moved. Montcalm had taken the precaution of getting the assent of the Indian chiefs to the terms of surrender, but no sooner had the British troops left the fort than the Indians climbed through the embrasures in search of rum and plunder. They butchered the sick, but finding little to loot they went off to the camp. The French guards could not or would not keep them out, and they swarmed through the camp plundering where they could and terrifying the women and children. Montcalm worked hard to bring them back to discipline, and by nine o'clock at night order was restored. But worse was to follow.

In their haste to be gone the British assembled at daybreak (10th August) before the French escort arrived. They had muskets but no ammunition, and many of them had no bayonets. Seventeen wounded men were left unprotected in the huts, and at five o'clock in the morning

¹ *Scots Magazine*, 1757, p. 542.

the Indians dragged them out and tomahawked and scalped them in the sight of several French and Canadian officers.¹ This was the beginning of the massacre, which is described by Colonel Frye in his diary as follows:—²

“Wednesday, August 10th.—Early this morning we were ordered to prepare for our march, but found the Indians in a worse temper (if possible) than last night, every one having a tomahawk, hatchett, or some other instrument of death, and Constantly plundering from the officers their arms &c.: this Col^o. Monro Complained of, as a breach of the Articles of Capitulation, but to no effect; the French officers however told us that if we would give up the baggage of the officers and men to the Indians they thought it would make them easy, which at last Col^o. Monro Consented to; but this was no sooner done than they began to take the Officers’ Hatts, Swords, Guns & Cloaths, stripping them all to their Shirts, and on some officers left no shirt at all. While this was doing they killed and scalp’d all the sick and wounded before our faces, and then took out from our troops all the Indians and negroes and Carried them off; one of the former they burnt alive afterwards.

“At last with great difficulty the troops gott from the Retrenchment, but they were no sooner out then the savages fell upon the rear, killing & scalping, which Occasioned an order for a halt, which at last was done in great Confusion, but as soon as those in the front knew what was doing in the rear they again pressed forward, and thus the Confusion continued & encreased till we came to the Advanc’d guard of the French, the savages still carrying away Officers, privates, Women and Children, some of which later they kill’d & scalpt in the road. This horrid scene of blood and slaughter obliged our officers to apply to the Officers of the French Guard for protection, which they refus’d & told them they must take to the woods and shift for themselves, which many did, and in all probability many perish’t in the woods: many got into Fort Edward that day and others daily Continued coming in, but vastly fatigued with their former hardships added to this last, which threw several of them into Deliriums.”

Colonel Frye relates his own experiences in a letter written on 16th August to Thomas Hubbard, Speaker of the House of Representatives of Massachusetts;³ “I was strip’d myself of my Arms & Cloathing, that I had nothing left but Briches Stockings Shoes & Shirt: the Indians round me with their Tomehawks Spears, &c., threatening Death I flew to the Officers of the French Guards for Protection but they would afford me none, therefore was Oblig’d to fly and was in the woods till

¹ Affidavit of Dr Miles Whitworth, Public Record Office.

² Public Record Office.

³ Public Record Office.

the 12th, in the Morning of which I arriv'd at Fort Edward almost Famished." •

Many of the fugitives returned for refuge to the fort, whither Monro himself had gone to demand protection for them, and in the course of the day Montcalm and his officers recovered more than 400 prisoners from the clutches of the Indians. They were kept at the entrenched camp till the 15th, when they were sent under escort to Fort Edward, and by degrees other stragglers came in. Montcalm had a guilty conscience over the whole affair, and wrote a letter in his own justification to the British Commander-in-Chief, Lord Loudoun, blaming the British soldiers for having allowed the Indians to broach their casks of rum.¹ Perhaps they did allow this, but unarmed as they were they had no power to refuse; and, moreover, Montcalm had had ample warning the previous night that just such an outbreak was likely to occur, and he ought to have taken precautions to prevent it.

Webb in his dispatch to Lord Loudoun wrote:² "I must do Lieutenant-Colonel Monro and the rest of the regular troops who were concerned in this siege the justice to say they behaved extremely well, and wish it were in my power to alledge as much in favour of the provincials."

Monro reached Albany about 17th August, and as the British authorities declared the capitulation void on account of the massacre, he was free to serve again; but the strain had broken his health, and on 3rd November he died very suddenly, and next day was "decently buried" in St Peter's Church.³ A footnote by the editor of Luke Grindlay's *Diary of 1757*⁴ says he was stricken with apoplexy in the street. The authorities at home acquitted him of blame for the loss of Fort William Henry, for in January 1758, before his death was known in London, he was gazetted full Colonel.

In February 1756, just before his regiment left Ireland, he made a will⁵ bequeathing all his property to three reputed children—two boys and a girl; so Cora and Alice, the two daughters who figure so largely in *The Last of the Mohicans*, must be consigned to the realm of fiction.

¹ *Scots Magazine*, 1757, p. 600.

² Public Record Office—War Office, Series 1 (North America), vol. i.

³ *Diary of the Rev. John Ogilvie*, Episcopal Minister at Albany.

⁴ Published by the Acorn Club of Hartford, Connecticut, in 1907. For the references as to Monro's death and burial I am indebted to the Hon. James Austin Holden, State Historian of the State of New York. See *Proceedings of the New York State Historical Association*, vol. xiii. pp. 389 seq.

⁵ Prerogative Court, Dublin, 1759.

III

NOTE ON TWO HOARDS OF COINS BURIED ABOUT 1800. BY
GEORGE MACDONALD, C.B., F.B.A., LL.D., Curator of Coins.

On 5th August, 1915, when the Berwickshire County Council's road-roller was at work between Moorhouse and Cockburnspath, one of the workmen, who was engaged in digging for "blinding" by the side of the road at a point known as Juniperbush, about half a mile north of Moorhouse, unearthed two silver coins. Systematic search by himself and his companions increased the number to a total of 28, all of which were handed over to the Crown authorities and transmitted for examination to the National Museum. The most striking feature about them was their extraordinarily worn condition. The great majority had been rubbed so smooth that no conjecture as to their identity was possible. A few seemed to have suffered through clipping, and one or two had been countermarked, apparently with initial letters. After a careful scrutiny they were classified as follows :—

SHILLINGS.

William III.	.	.	.	.	.	.	.	.	.	3
George II.	.	.	.	.	.	.	.	.	.	2
Illegible	.	.	.	.	.	.	.	.	.	10

SIXPENCES.

William III.	.	.	.	.	.	.	.	.	.	3
Illegible	.	.	.	.	.	.	.	.	.	10
										<hr/>
										28

Taken by itself, this small find from a lonely woodside in the Eastern Lammermuirs would have had little significance. But the interest attaching to it was very materially enhanced by another discovery, which was made seven or eight weeks later in quite a different part of the country. On the afternoon of 30th September, 1915, the wife of a hand employed on the farm of Corskie, near Banff, was walking along the road which leads from the Banff and Turriff turnpike-road to Montcoffer House, when she observed a silver coin lying at the foot of a sunk fence, close to the entrance of a rabbit burrow. Scraping at the burrow, first by herself, and afterwards with the help of a neighbour, she secured quite a large number of what were evidently old sixpences and shillings. Subsequently her husband and another man cleared the whole spot

thoroughly with a spade, uncovering a good many additional coins as well as a gin-bottle, in which the hoard had originally been concealed. The find was handed over to the Crown authorities, who forwarded the coins to the National Museum for a report. They numbered 387 in all, 215 being of silver and 172 of bronze.

The silver, which it will be convenient to deal with first, fell into the following groups:—

HALF-CROWNS.	
Charles II.	2
Anne	1
	<hr/> 3
SHILLINGS.	
Charles II.	2
William III.	62
Anne	11
George I.	1
George II.	2
Illegible	56
	<hr/> 134
SIXPENCES.	
Charles II.	1
William III.	13
George II.	1
Illegible	62
	<hr/> 77
FOREIGN COIN.	
France (Louis XV.)	1

The close analogy with the Berwickshire hoard was apparent at a glance. The half-crowns, though considerably worn, were still fairly legible. With the smaller denominations it was otherwise. All of the shillings were much rubbed. Those that are classified as "illegible" were worn absolutely smooth, while of the remainder many owed their identification to the chance preservation of a mere fragment of type or inscription. Some had been countermarked with initials, and twenty-two had been "crooked," doubtless to test the metal. The sixpences, as is clear from the list, were in even worse case. The great majority were worn not only smooth but thin. All save two had been "crooked," and a few had been countermarked like the shillings.

The condition of the bronze coins, though slightly better than that

of the silver, was for the most part deplorable enough. Apart from a blank which did not seem ever to have been struck, and which was rather smaller than one of the broad-rimmed pennies of George II., the following is a list of the regular issues:—

BAWBEE.

Charles II.	1
---------------------	---

HALFPENNIES.

William III.	7
George II.	42
George III. (British)	51
George III. (Irish)	7
Illegible	31
	<hr/>
	138

FARTHINGS.

George II.	1
George III.	5
Illegible	9
	<hr/>
	15

FOREIGN COIN.

Holland (1720)	1
--------------------------	---

As with the silver, so with the bronze, the pieces classed as illegible had been literally rubbed smooth, while nearly the whole of the rest were seriously damaged by usage. This, coupled with the motley crowd of sovereigns represented, conveyed a vivid impression of the miserable state to which the currency had been reduced, in silver and in bronze alike, at the time when the hoards were buried. And the Banffshire find provided a valuable clue to the approximate date of concealment. In addition to the coins already enumerated, it contained the following sixteen trade-tokens of bronze:—

SCOTLAND.

Edinburgh	3
Glasgow	3
Inverness	3
Leith	1
Montrose	1
Joseph Archibald, Seedsman, Edinburgh	1

ENGLAND.	
Rochdale	1
WALES.	
North Wales	1
IRELAND.	
Cronebane	1
Sise Lane	1
	<hr/>
	16

On the whole, the trade-tokens were in much better condition than the regular issues. But even the latest of them, which was dated 1796, had seen some little service, and must have been in circulation for a few years before the bottle was deposited. Burial probably took place in the early years of the nineteenth century. The fact that the hoards came from different parts of the country justifies us in regarding them as typical of the money which, in Scotland at least, had perforce to be handled by the generation that saw the victory of Trafalgar.

IV.

DESCRIPTION OF SCULPTURED SYMBOL STONE AT RAYNE AND
SMALL CROSS AT CULSALMOND, ABERDEENSHIRE. BY JAMES
RITCHIE, F.E.I.S., CORR. MEM. S.A. SCOT.

SCULPTURED SYMBOL STONE AT NEWTON OF LEWESK, RAYNE.

The parish of Rayne lies fully twenty miles north-west of Aberdeen, and can be reached from either Inveramsay or Oyne stations on the main line of the Great North of Scotland Railway, or from Wartle station on the Macduff branch. From an antiquarian point of view it is rather an interesting parish. Lowrin Fair (*i.e.* Lawrence Fair), much frequented in olden times, and still of considerable importance, is held annually in August at the village of Old Rayne. To it people gathered from far and near, and much business was transacted, not only in the sale of horses and cattle, but in that of many other kinds of merchandise. It is recorded that on one occasion, Leslie, the laird of Pitcaple, an estate in the neighbouring parish, bought up all the wine to be had at the Fair, in anticipation of an approaching royal visit. Of the frequent disputes which arose at the Fair, one is commemorated in Tullidaff's Cairn, which marks the spot where Leslie of Wardes slew the laird of Tullidaff.

The old market cross (fig. 1) stands in the centre of the village, and in its shaft are embedded one or two fragments of iron, all that remain of the joughs, an old Scottish instrument of punishment, which, it may be presumed, was in frequent use during the time of the Fair. In the same village, too, there lived John Montgomery, who in 1686 erected the fine Market Cross which still forms so prominent an object in the Castlegate of Aberdeen.

Near the Parish Church lies the Bowman's Stone (fig. 2), where in olden times the men used to assemble to practise shooting with the bow, so that they might be ready to defend their homes when occasion

a court held for the settling of a dispute between William of St Michael and the Bishop of Aberdeen. A number of years ago, when



[J. R. photo.]

Fig. 1. Ancient Market Cross at Old Rayne.

excavations were carried out within the area of this circle, pieces of burnt bones, urns, and charcoal were found.

It is in this district, then, which already contains so many objects of interest to the antiquary, that the sculptured Symbol Stone now to be described has been recently found. Fully half a mile to the east of the

"Standing Stones of Rayne" lies the farm of Newton of Lewesk, where the stone was discovered. In the autumn of 1914, after the hay had been secured, and just before the corn crop was ready for cutting, Mr James Gordon, the farmer at Newton, took the opportunity to remove a block of stone from one of his fields, because it lay in the way of the plough when the land was being cultivated. The block lay embedded in the



Fig. 2. The Bowman's Stone, near Parish Church, Rayne.

[J. R. photo.]

soil about 300 yards south-west of the farm-steading, and only a few yards distant from the drystone dyke which forms the western boundary of the field, and from its site the "Standing Stones" are visible in the distance. When the stone had been raised, Mr Gordon fortunately happened to notice some curious marks on the under surface which had been hidden in the soil. Interested in the discovery, he carefully removed the stone to the farm-steading, where it could be examined at leisure, and thus secured its preservation. In so acting Mr Gordon has earned the gratitude of all who are interested in our ancient Scottish Symbol Stones.

Underneath the stone lay a quantity of black earth sufficient to fill an ordinary pail, but though Mr Gordon examined it with care he could detect no fragments of bones or any other objects in it. When I visited the spot, several months afterwards, the soil had been so much trodden underfoot by the cattle pasturing in the field that its further examination was rendered impossible. The facts that the stone was lying on its face, and that a quantity of black soil lay underneath it, suggest the inference that, in addition to its original purpose as a Symbol Stone, it had been utilised at a later date as a grave cover.

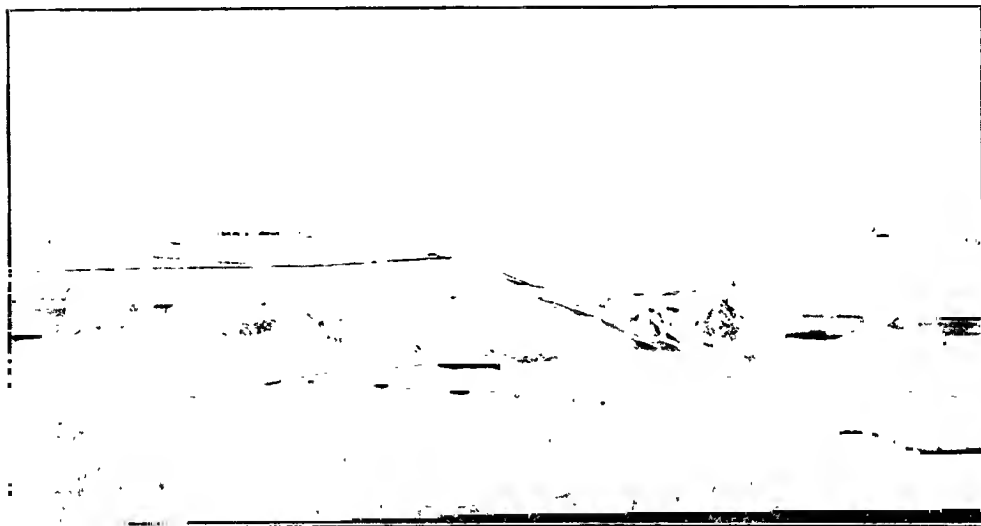


Fig. 3. The Standing Stones of Rayne.

[J. R. photo.]

The stone itself (fig. 4) is a block of reddish-coloured granite, similar to what is found on Bennachie, and quite common in the district. It measures 2 feet 10 inches long, 1 foot 4 inches broad, and is about 7 inches thick. Centuries of ploughing have scored its back, broken its edges, and damaged portions of the symbols towards the outside of its face, but, on the whole, those portions which remain have been fairly well preserved by the protection of the soil in which the sculptured surface lay buried. The symbols inscribed on it are three in number, viz. the Mirror Case, the Double Crescent, and a Rectangle with rod attached, of which no previous example has been found on any of the Scottish sculptured stones.

The Mirror Case is of not infrequent occurrence. Including the present example, it is found twelve times on the sculptured stones, and

twice on the wall of the cave at Covesea in Elgin or Morayshire. In addition a rather doubtful instance occurs in a cave at East Wemyss in Fife. Seven of the examples are found in Aberdeenshire. There exists also a modified form of what appears to be the same symbol, in which a square-shaped indentation occurs on the lowest part of the figure. Four instances of this form are known, but none of these occur in Aberdeenshire. The circular head of the figure on the Newton of Lewesk stone measures 6 inches in diameter, and is ornamented by three rude arcs overlapping each other within the circle in a manner different from any other known example carved on stone. Forms, somewhat similarly arranged, but much more elaborate in character, with the ends of the rude arcs turned into spirals, are, however, found in the Book of Kells, and in some of the illuminated Gospels.

At the opposite end of the stone the Double Crescent Symbol is incised. It is formed of two narrow crescents placed back to back, a portion of each convex side being omitted near the point of junction, and the vacant space thus left being ornamented by two small semi-circles, placed upright, with their convex sides turned towards the centre of the figure. An ornament formed of a semi-circle supported by curved lines, and having a small hollow dot in the centre, projects from the middle of each concave side of the figure, and another curved line connects the diverging limbs of the crescents at each side. The whole figure, when complete, measured 7 inches in length, but the points of the crescents have been broken off at one end. This Double Crescent Symbol is of rare occurrence, only two previous examples of it being known. One of these is on the stone



[J. R. photo.]

Fig. 4. Newton of Lewesk Sculptured Stone,
now at Logie Elphinstone.

found at the Castlehill of Kintore, and now in the National Museum of Antiquities in Edinburgh, and the other is on the stone from Ulbster, which now stands within the grounds of Thurso Castle. In each of these cases the ornamentation of the figure differs from that at Newton of Lewesk.

In the centre of the stone is carved the third symbol. It consists of a rectangular figure, with a small square in the centre, and having a rod touching it obliquely on the two longest sides. Each of these sides measures $7\frac{1}{2}$ inches in length. One of the remaining sides is slightly longer than the other, and measures $6\frac{1}{2}$ inches in length, the shorter one being a $\frac{1}{2}$ inch less. Each of the sides of the small square in the centre is $1\frac{1}{2}$ inch long. The rod which is attached to the rectangle extends for a distance of 6 inches beyond it on one side, and for a slightly less distance on the other, but as the latter portion is broken off at the end its full length cannot be ascertained. The shorter portion of the rod is crossed at right angles by a line 2 inches long, and there appears to be a portion of a second cross line at the broken edge of the stone. As already remarked, this rod strikes the rectangle obliquely, and though both portions of it are in the same straight line, it does not pass through the figure, as the V- and Z-shaped rods do with the symbol to which they are attached.

No other figure precisely similar to this one has previously been discovered. A rectangular symbol occurs twelve times on the Scottish sculptured stones, but in no instance is it like the present one. In the example from Grantown, now in the National Museum, there is a small spiral attached to each of two of the opposite corners, but it is quite unlike the line attached to the Newton of Lewesk rectangle. There are also nine examples of the notched rectangle having a Z-shaped rod passing through it, but none of these are at all like the Lewesk symbol. The nearest approach to it occurs, not on the sculptured stones, but on the walls of the caves at Covesea in Elgin, and East Wemyss in Fife. On the wall of the Covesea Cave there is a rectangle about 16 inches long and 10 inches broad, enclosing a smaller one 10 inches long and nearly 5 inches broad, but it has no rod attached to it. In the caves along the shore at East Wemyss the rectangle occurs several times, and in a single instance it takes the form of a square with a smaller one inside. In no case, however, does there appear to be a rod attached to any of these cave figures, all of which are very roughly formed.

These three symbols are all the figures which appear on the Newton of Lewesk stone, but there are faint traces of one or two other lines on its surface. It is impossible to tell with certainty, however, whether these lines have been parts of additional symbols, or are merely accidental

scratches on the face of the stone. As they occur near its edges, it seems probable that they have been caused by the point of the plough scraping along its surface during agricultural operations.

Mr Gordon pointed out another large flat stone lying half buried in the same field in which the symbol stone was found. No carving appeared on its exposed surface, but in the hope that something might be found on the hidden side an attempt was made to lift it up. It proved to be too heavy for us to turn completely over, but we managed to raise it sufficiently to enable its under surface to be examined. To our disappointment, however, no trace of carving was discovered on it. I am much indebted to Mr Alex. Smith, M.A., The Schoolhouse, Rayne, for the trouble he took in helping to locate the position of this stone after vague rumours of its discovery had reached me.

Colonel George Milne, on whose estate the Newton of Lewesk stone was found, has recently removed it from the farm where it was discovered, and has placed it, for better preservation, beside the three sculptured stones which already stand in the grounds near his mansion-house of Logie Elphinstone, about a mile from Pitcaple Station on the Great North of Scotland Railway.

SMALL CROSS AT CAIRNHILL QUARRY, CULSALMOND.

About a mile to the east of the Parish Church of Culsalmund, on the north side of the main road, lies Cairnhill Quarry, the stones from which are chiefly used for repairing the roads in the district. At the eastern side of the gateway leading from the road into the quarry stands a large block of stone (fig. 5). It is of diorite, 5 feet in height, with a breadth, at the widest part, of 3 feet 2 inches, and a thickness of about 1 foot 9 inches. On the western face of this stone there is incised a small plain cross, formed of two lines crossing each other at right angles near the centre. The shaft of the cross is 7 inches long, and the arms, from end to end, measure 6 inches. The stone formerly lay, face downwards, almost in its present position, but as it interfered somewhat with the traffic out and in to the quarry, it was raised up a number of years ago, and was set on end at the side of the gateway.

While we were making inquiries about the stone, one of the men working in the quarry mentioned that he had heard there was a deer carved on the back of it, though he himself had never seen the figure. Unfortunately this part of the stone could not be properly examined at the time, as the wall forming the boundary of the turnpike was built up against it. But to set the matter at rest, on a later day, another visit was made to the place, and a workman procured to take down and

rebuild the portion of the wall which hid the stone. After the surface had been washed to remove the soil which clung to it, search was made for the carving, but no trace of a deer or any other figure was found.



[J. R. photo.]

Fig. 5. Standing Stone with Small Incised Cross, at Cairnhill Quarry, Culsalmund.

This block of stone has somewhat the appearance of a standing stone removed from a circle. It is evident that a large stone circle, now destroyed, must in former times have stood somewhere in this neighbourhood, for several large blocks of a similar character have been utilised as gateposts near Freefield House, about a mile to the south. A circle

formerly stood near Tocherford, another at the Kirk of Culsalmond, and two others near Colpy. All these have been destroyed, but it seems unlikely that the heavy blocks of which they were composed would have been removed to any great distance from their sites. The Abbey of Lindores held extensive possessions in this neighbourhood, and it may have been that the cross was put upon this stone to mark the boundary of the ecclesiastical lands. An old road to Aberdeen passed close to the stone, but is not now in use at this point.

MONDAY, 8th May 1916.

THE HON. JOHN ABERCROMBY, LL.D., President,
in the Chair.

A ballot having been taken, the following was duly elected a Fellow:—

JOHN WHITE, 18 Arthur Street, Pilrig, Leith.

The following Donations were announced and thanks voted to the Donors:—

(1) By WILLIAM FORSYTH, F.R.C.S.E., F.S.A. Scot.

Communion Token of the South Free Church, Elgin, 1854.

(2) By DAVID MACRITCHIE, F.S.A. Scot.

Seven fragments of early Stained and Painted Glass from York Minster, obtained prior to the year 1850.

(3) By THOMAS JOHNSON WESTROPP, M.A., the Author.

Prehistoric Remains (Forts and Dolmens) in Burren and its South-Western Border, Co. Clare. Part XII.: North-Western Part. Reprint from the *Journal of the Royal Society of Antiquaries of Ireland*, vol. xlv., Part 4. Pamphlet.

(4) By FR. C. C. HANSEN, M.D., Professor of Anatomy in the University of Copenhagen, the Author.

Outlines of the Geography and History of Greenland. Copenhagen, 1915. Folio.

De Ældste Kongegrave og Bispegrave i Roskilde Domkirke. Copenhagen, 1914. Folio.

(5) By THOMAS MAY, F.E.I.S., F.S.A.Scot., the Author.

The Pottery found at Silchester. Reading, 1916. 8vo.

Purchases for the Library:—

A Descriptive Catalogue of the Western Mediæval Manuscripts in Edinburgh University Library. By Catherine R. Borland, M.A. Edinburgh, 1916. 8vo.

The Stirling Guildry Book. Extracts from the Records of the Merchant Guild of Stirling, A.D. 1592-1846. Edited by W. B. Cook and David B. Morris. Stirling, 1916. 8vo.

The following Communications were read:—

I.

NOTICE OF THE DISCOVERY OF AN INSCRIBED STONE AT WEEM,
NEAR ABERFELDY, PERTHSHIRE, WITH SOME ACCOUNT OF
ST CUTHBERT'S CONNECTION WITH WEEM. By ALEXANDER
HUTCHESON, F.S.A.Scot.

While residing at Aberfeldy, Perthshire, in the autumn of 1893, and visiting the old church of Weem, distant about a mile from the former village, I observed leaning up against the south wall of the church a stone slab bearing an inscription in lettering so unusual and puzzling in form that I procured a photograph of the stone, a copy of which accompanies this notice.

On making inquiry I learned that the stone had shortly before been discovered at a depth of 2 or 3 feet below the surface while a grave was being dug, that it was lifted out and placed where I saw it lying against the wall of the church, which is now only kept in repair as a place for intramural interments. Through the good offices of Rev. John McLean, F.S.A.Scot. (since deceased), I got the stone removed to the interior of the church for better preservation, although unfortunately, as I afterwards discovered, the stone in the course of removal had sustained a fracture at the edge next to the main part of the inscription.

The stone is an undressed slab of a hard slaty crystalline rock of irregular form about 5 feet in length, 1 foot 9 inches in breadth at the widest part, whence it tapers rapidly to one end, and from 5 to 6 inches in thickness.

The inscription is in two lines, separated from each other by a wide interval. In both, the letters, which are about $2\frac{1}{2}$ inches in height, are

incised. In the longer inscription there are seven letters. The first letter is undoubtedly an A, the familiar form of which might have been expected to assist in the identification of the other letters, but has not done so. The second and fourth, shaped like a reaping-hook, are very peculiar, and may be intended for the same letter, but there are points of difference.

They may be intended for S, R, or Q. The third and fifth letters of the inscription look like C, but they also differ slightly in form. It has been suggested that instead of C they may be round-backed E, the central tongue of which has weathered out, although no trace of it now remains. The sixth letter, like the second and fourth, defies transliteration. It may be an H, M, or W, but I can trace no such forms of these letters. The only example I can find is given in Fry's *Pantographia*, p. 88, where it appears as an N, in an old French alphabet of the fifth century. Again, it may represent more than one letter, what is known as a ligatured or compound letter, two or three letters conjoined in one, a practice of great antiquity. The concluding letter seems like a small capital G, or round-backed or Lombardic E, the tongue of which has partly weathered out. On the whole, I think it is G.

The lower line of inscription, at the first glance, looks like the figures 17501. Inverting it and reading from above it may yield IOSLI. Early inscriptions reading in a reverse order are met with, arranged also along the sides, parallel to all the edges of stone slabs, and reading from within. Such inscribed slabs were presumably intended to be recumbent. There is nothing in the Weem slab to indicate how it had been originally placed—upright or recumbent,—although it may well have been set on end with the narrow point in the ground.

A very simple explanation occurred to me: it may be mentioned. A



Inscribed Stone in Weem
Churchyard.

somewhat wide acquaintance with Highland graveyards has shown that, doubtless owing to the hardness of many of the native rocks, monumental inscriptions, especially on the older stones, are often confined to a mere record of family initials. This practice, no doubt, finds expression also in Lowland burying-grounds, even where the full Christian and surnames are given, the initials of the parents and children being sometimes arranged in columnar order at the sides below.

What then if this puzzling inscription be only a record of family initials, here in one continuous line, instead of as usual arranged in a column as thus :—

A S
C S
C H G

and the date 1751 expressed as 17501, in like fashion with the man who entered his age in the census paper as 401, that is, 40 and 1, in place of 41 ?

The difficulty in accepting this as an explanation is that no stone of a date so recent as 1751 has yielded such very archaic-looking letters.

Another difficulty arises when considering the association of three initial letters, CHG, in the last place of which neither the ultimate nor penultimate letter agrees with the surname initial in the preceding pairs of letters. Moreover, the presence of a middle letter in such initial inscriptions is almost if not quite unknown, nor can there be here in this aspect any suggestion of a titular initial. It would therefore seem that such a comparatively recent date as 1751 is untenable. A careful search in the burying-grounds in the neighbourhood failed in tracing any similar lettering. If then the inscription is to be read IOSLI, as above suggested, it may be remarked that this word resembles the concluding word of the ogham on the stone at Newton of Insch, read by Lord Southesk as "IOSII."¹

In dealing with the main line of the inscription it must be apparent that a considerable diversity of spellings results from the various alternatives offered by the unidentified letters, but no feasible association from any one of them. So far, the first letter A, if round-backed E be discarded, would seem to be the only vowel in the word, if indeed it be only one word, and along with the third and fifth letters, regarded as C (or round-backed E), would indicate that the inscription is in capitals throughout. It is, however, proper to remark that we may not possess the whole of the inscription, there being just in front of it a hollow from which evidently a skelb has come off, possibly the result of an accident when the stone

¹ *Proc. S.A. Scot.*, xvii. 39. It has been suggested to bear a likeness to "IOSA," the Gaelic form of the sacred name Jesus.

was lifted out of the ground. In this way one or more letters may have been lost.

Assuming for the nonce that there may have been an **M** in front of the **A**, and that the succeeding letter is a **Q** (an uncommon letter in Roman letter inscriptions but common in oghams), succeeded by a round-backed **E**, and reading **M** for the sixth letter, one might try the transliteration (**M**)**AQE QEME**. **Q** is generally reckoned equal to **CU**, which would give for the last word **CUEME**, yielding, phonetically rendered, **MAC WEME**, with possibly a reference to the place-name.

This is, however, not very feasible, seeing there is not here any clan or family name of Weem. A Lowland form of Wemyss is found as early as the twelfth century, doubtless derived from the territory of Wemyss on the Fife coast of the Firth of Forth, where the numerous caves would in Gaelic-speaking times originate that place-name.

The surname of Wemyss, so far as I have been able to trace, has no connection with the Perthshire parish. The family prefix **Mac**, if accepted, presupposes a family name, and there are others common to the Highland clans not so very different in appearance and sound, such as **Mac Cowan**, **Mac Kean**, **Mac Ewen**, etc. Applying this, and keeping in mind that **Q** = **CU**, and in oghams = **K**, and taking the sixth letter as **N**, we have the alternatives **Mac Cuene** and **Mac Kean**.¹ Whether this is even probable must be left until identity of letters can be determined with greater probability of satisfactory results.

So far no attempt had been made to analyse the minor line of the inscription. At first sight it looked as if it might be of later origin. Only one of the complex letters of the upper line was here repeated, if indeed the central letter be the same as the second and fourth above. I have, however, come to the conclusion that it was cut by the same workman who inscribed the main line, and base that conclusion mainly on this peculiar central letter; but also as bearing on an archaic origin I consider that some at least of the letters in the main inscription are not the rude work of an uninstructed mason or stonecutter, but are characterised by a finish betokening a degree of artistic taste—such workmanship, moreover, as could only have been executed with sharp-edged metal tools, as evinced particularly in the V-cutting of the fourth and fifth letters. Reverting to the minor line, I refer first to the central character, and, taking it in the reverse order, that is, reading it from above, it resembles closely the second and fourth of the main line, especially in the expanded ends. I dismiss the idea that it might be the figure 5. I know of no

¹ This name as well as **Mac Cuene** is probably a modernised form for which **Kean** and **Cowan** would be still more modern, the **K** and the **C** being in themselves merely a shortening of the patronymic **Mac**, the original form of each respectively being **Mac Ian** and **Mac Owan**, etc.

ancient example of that figure terminating at the lower point in an expanded end as here.

The supposed figure 7 may also be dismissed on similar grounds of form. The accent-like mark at the top or bottom, according as it is looked at from above or below, may give to the upright character or possess in itself a distinct and separate value, if it cannot, looked at from above, be regarded as here assumed as a capital L. I have read it "Iosli," but cannot suggest a relationship to the main line of inscription.

This line of inquiry was based mainly on the supposed existence of a prefixed letter M which had scaled off. The reason which led to its adoption is stated in the argument.

I had, however, all along felt that until the identity of the two final letters could be established, no progress was possible. The final character had been read as a round-backed or Lombardic E, the central tongue of which existed only at the outer point, the inner part of it having weathered out. Reflection has convinced me that this letter is unmistakably a G. This is a very rare letter as a terminal in Scottish place-names and in personal appellations. It is, however, not so in words having an Irish or Welsh connection. If then this letter is really G, what is the preceding letter? The suggested letters H, M, and N do not fit. But on turning to Welsh forms we find the terminal "WG" occurrent in both place-names and personal names: Morganwg in Llandaff is an instance of the former, and Cattwg, the Welsh form of S. Cadoc, the first abbot of Llancarvan, is an example of the latter (*The Historians of Scotland*, vii. pp. 350-1). It is unnecessary to multiply examples. Applying this, it will at once be recognised that the sixth letter complies more closely with the form of W than any of the other suggested letters—a pointed arch between two upright stems,—although I have not been able to trace any lapidary or textual example of the form. Possibly a search of Welsh records and inscriptions, not available to me, might result in the confirmation of this suggestion.

Taking then the main inscription on the Weem stone as complete in itself, and reading, as I now incline to do, the second and fourth letters as S and third and fifth as C, we get ASCSCWG, the sound of which may be ventured at as nearly ASK SKOOG. Ascough is a personal name, and also a place-name. William Ascough was Bishop of Sarum and Confessor to King Henry VI. in 1450. Asquith and Askew are probably forms of the name. Ascog, as a place-name, given later as Ascough, occurs in the island of Bute. John Stewart of Ascog was M.P. for Bute in 1633. In 1645 a warrant was given to the Marquis of Argyll to bring Captain Stewart of Escoge prisoner from Dumbarton to Edinburgh.¹ These

¹ Acts of Parliament of Scotland.

instances of the existence of a name, both place-name and personal, suggest, if above reading be correct, that a person, either territorially or patronymically so designated, may have been commemorated on the Weem stone.

No attempt had hitherto been made to read into the inscription a Roman origin, for the reasons, first, that some of the characters have not been recognised as Roman letters, especially the second, fourth, and sixth of the main line; and second, because of the absence of dividing points between them.

The entire absence of points would be unusual but not unknown in Roman inscriptions. The difficulty here is that these characters in that case would be all sigla, whereas while these are common on Roman monuments and on coins,¹ there are always present conjunctions, although

¹ The occurrence of isolated initial letters, from the limited space available, is common on coins, and this has prevailed from the earliest to the latest times. What may be regarded as a favourable modern example is found in the legend on the reverse of the crown-piece of George II., and on the early coinage of George III., as follows:—M. B. F. ET H. REX. F. D. B. ET L. D. S. R. I. A. T. ET E., the translation being—*Magnæ Britanniae, Franciæ, et Hiberniæ Rex, Fidei Defensor, Brunsvicensis et Luneburgensis Dux, Sacri Romani Imperii Archi Thesaurarius et Elector*,—King of Great Britain, France, and Ireland, Defender of the Faith, Duke of Brunswick and Luneburg, Arch-Treasurer and Elector of the Holy Roman Empire.

A remarkable instance of initial-inscription exists in the Houff burying-ground, Dundee, which so far as known to me has never been published, but may be worthy of preservation. It is recorded in Thomson's MS. Book of the Houff, a copy of which is preserved in the Dundee Free Library, but with some slight errors, which are here corrected. Thomson does not tell how he arrived at the expansion, but he lived in the early part of the last century, and it is just possible it was then common knowledge in the town.

The tombstone, which is a plain upright slab lettered on both sides, is No. 321 in the register.

On the east side it bears:—

"Erected by William Clark, Jailer, Dundee, and Isabel McGilveray his spouse in memory of their children, viz. Nicholas died the 15th Feby. 1797, aged 5 months; Isabel died 11th Novr. 1808, aged 5 years & 10 months; Daniel died 17th Novr. 1812, aged 14 years and 8 months; Alexr. died at Jamaica, 27th May, 1817, aged 17 years; John died 13th Novr. 1826, aged 18 years; Sophia died 17th Sept. 1827, aged 22 years; and the mother of 5 sons and 5 daughters died 7th Jany. 1830, aged 53 years."

On a small brass plate inserted on west side of stone appear the following letters:—

"T. S. & T. W. B. W. T. I. W. T. R. A. C. F. S. D. Y. P."

Then below in an arched form cut in the face of the stone are the following letters and verse:—

"I. W. C. D. O. T. O. S. C. T. D. I. O. 1793. T. I. H. M.
S. A. N. O. I. A. L. O. A. G. P. A. A. H. O. A. H. B. R.

Cuimhich am Bas.

Now we have reached the heavenly shore
These mortal frames we need no more,
Their work is done, the grave devours,
And now these frames are no more ours.

Reader, this is certain;
Dost thou believe it?"

The explanation is prosaic enough, and seems something like a joke for the benefit of the grave-digger, Thomas Shepherd, and his assistants—"the working band," who were to explain the

commonly abbreviated, of associated letters to give a lead in determining what the sigla stand for; but even then, in many cases they have had to be guessed at.

Roman sepulchral inscriptions are usually of the briefest, and follow a recognised order, and it might not prove difficult to give an expansion here which would fit the letters, but until they are individually identified, any such attempt would be useless.¹

It must be confessed that all that has been advanced above is more or less guesswork, and extremely vague. It cannot be otherwise until a surer basis is established by identification of all the letters. Moreover, there will always be the difficulty arising from uncertainty of pronunciation, which equally in the Welsh (and here we seem to be on the Welsh fringe in Eastern Perthshire) as in Gaelic speech dominates the structure of a word and its grammar.

The reasons which led, as I said, to this communication being so long delayed arose from the hope that time would help to a transliteration being arrived at. That hope has not been realised. I am, however, sanguine that from publication this monument may yet yield up its message. It is only necessary to add in reference to the stone that although found in a churchyard it may be older than the churchyard.

[Since this paper was read to the Society, I have been informed that two eminent authorities have expressed doubt as to the inscription on the stone being ancient. One is of opinion that it is not older than the middle of the eighteenth century, assuming apparently that the second line gives the date 1750. The other concurs, giving details. He considers it to be the work of a "prentice hand—perhaps one of the family"; and further,

mysterious letters for "your pleasure"! The expansions have been variously interpreted, but the following are as given by Thomson.

The first line on the brass plate:—"Thomas Shepherd & The Working Band Will Thee Instruct What This Royal Arch Contains, For So Doing Your Pleasure."

The arched line:—"I William Clark Designed On The Other Side Came To Dundee In October 1793 Then In His Majesty's Service A Native Of Inverness A Lover Of All Good People And A Hater Of And Hated By Rogues." Gaelic:—"Remember Death."

A consideration of the inscription shows that the monument having been erected by husband and spouse in memory of their children, was probably put up sometime between 1827, the date of the last recorded of the family, and 1830, when "the mother of ten" died. Mrs Clark seems to have been survived by four of her family and by her husband, whose death does not appear on the stone. So that William Clark, who doubtless was responsible for the whole inscription, may have for several years enjoyed the mystifications of its message to the living, so very inappropriate to accompany his thirty-three years' record of family vicissitudes. It is worth noting, as shown by the dates, that Mrs Clark was only eighteen years of age when married, and nineteen when her son Nicholas was born.

¹ The main inscription on the Newton of Inch stone, extending to some forty-four characters, is accepted by the greatest living authorities as "in Roman minuscular forms," although by what seems strange inconsequence not a single character in that inscription has been identified with its Roman prototype (Dr Joseph Anderson's *Scotland in Early Christian Times*, 2nd series, pp. 220-1).

that the inscription may be the work of more than one person, and completed at different times. He considers the original inscription began with the three terminal letters C. W. G., which he reads Q. M. G., commemorating, say, Charles Mac Gregor; and that the letters in front were added subsequently to commemorate, say, Alexander and Christian Mac Gregor, the queer symbols, Nos. 2 and 4, being the sculptor's attempt at a contraction for "and." Further, he regards the lower line as a date, indicating that one or more persons died in 1750, and another or others in 1751.

It will have been observed I had considered the suggestion of a modern origin, and discarded it for reasons adduced. Let us look into it a little more closely, in the light of the arguments advanced by my critic. In the first place, the putting the C. M. G. as the original inscription so close to the edge of the stone seems inconceivable, seeing the whole surface of the stone was available; and surely it cannot be argued that the sculptor foresaw what was to follow, and so left the exact space and no more on the left for subsequent initials? Second, the insertion in front of the first-recorded death of a record of subsequent deaths is most improbable, and contrary to all precedent. Third, the use of the conjunction symbol for "and" is quite in keeping with a record composed of initials, but it may be questioned how far it was likely to be employed by a "prentice hand." The symbol appears in cursive forms and in print at least as early as the beginning of the seventeenth century. There is an absence of information as to when it began to be used in sculpture. I have for many years given close attention to the lettering on old tombstones, but cannot recall an instance of any crude form of the symbol, certainly of no such unrecognisable figure as is here claimed to suggest that this symbol had been intended. If the graver here knew of the symbol at all, it was all the more necessary he should have made himself acquainted with its usual form, to which the figure he has made bears not the slightest resemblance. Whatever his disqualifications as a graver may have been, it may safely be assumed he was desirous his labours should be legible to those who were interested, surely some of whom would be able to read. Can we suppose that, having succeeded so well in forming A, C, and G, he could go so far astray in the reproduction of others, rather than that those others have been cut with like attention to form, although not identified?

As to the suggestion that more than one person has been at work on the inscription, it ought to be evident that weathering has had much to do in producing in the case of some of the letters an appearance of inferior treatment. The argument of two hands having been at work would seem to point to the recognisable and better-formed letters being the

work of one, while the unrecognisable letters are the work of the other, and inferior, hand; but if so, then we are faced by the contretemps that the two classes are alternated, and such a division of labour is inconceivable. Moreover, the fourth and fifth letters in their sharp V-cutting manifest a high degree of skilled workmanship; but on the one hand the fourth is one of the queer symbols upon which my critic bases his argument for a prentice hand, while the other forms one of the three which he considers to have formed the original inscription, and so again we are up against the unthinkable division of labour involved in my critic's argument.

As for the supposed date, no such form of 7 is known in any recognisable arrangement of figures due to that period. Throughout that and the preceding century the horizontal arm, here entirely wanting, was made almost as long as the down stroke—which, moreover, was always sloped, and not as here perpendicular. A like objection applies to the 5. Nowhere in any century can I find a 5 formed as here. Then the 0, whether it be regarded as figure or letter, in its oval form and diminutive size points to an ancient type.

The sculptor ought to have had no difficulty with the date, as doubtless contemporary local examples would be available for his guidance.

I have put forward with all deference my readings. It may be objected that in giving more than one I have virtually given away my case. I may be permitted to refer to the multiplicity of interpretations evoked by the hitherto unexplained bilingual inscriptions on the stone at Newton of Inch.]

The Perthshire place-name of Weem is believed to be derived from the Gaelic word *uaim*, a cave, there being in the face of the steep precipitous hill known as Weem Rock a cave, or rather there are two caves, one of them having a connection with St Cuthbert.

Authorities are divided as to which of the caves the parish owes its name. One of the caves has a very narrow entrance, and is believed to extend in a very long way, with an outlet, it is said, by the side of a small loch, two miles northwards, called Loch Glassie, connected with which a local ballad embalms a folklore tradition. This, doubtless, would be the originating cave of the place-name, and well known in the district long before St Cuthbert's name could have been attached to the other, which is really no cave at all in the strict sense, but merely a shallow recess in the rock-face, and with a rocky shelf or platform a few feet in width in front. Here, it is said, St Cuthbert resided for some time, and the attribution to Cuthbert remains a tradition here to the present day. Latterly its name was changed to St David's Cave or

Chapel;¹ out of regard, it was said, to the memory of a Sir David Menzies, who became a monk and died in 1449. By whose agency he was canonised is not known; moreover, no "St David Menzies" appears in any calendar of Scottish saints.

The Rev. James M'Diarmed, who wrote the description of the parish which appears in the *Statistical Account* (1794), in referring to the name Weem, says: "It is derived from a remarkable cave in a high rocky bank near the parish church, but of which from the falling in of the earth or some other accident no vestige now remains."

It is difficult to know precisely what the writer of this paragraph meant, since the entrance to the cave is still quite open, although difficult of access, and perhaps the falling away of the rock below the entrance may have increased the difficulty of the ascent, so that he had never seen the entrance to the cave himself; or he may have referred to an internal blocking up from falls from the roof, although his language could scarcely warrant this interpretation. He makes no mention of St Cuthbert or of St David.

I visited the cave some forty years ago under the guidance of Rev. John M'Lean, minister of Grantully, a well-known authority, and native of the district, who related to me the legend above referred to. I was anxious to enter the cave there and then, but he dissuaded me from attempting it because of the steepness of the descent, and a twist a short way down which placed, he told me, the remainder of it in darkness, and suggested that if I wished to explore it I should do so in an old suit of clothes and provided with lights; but the opportunity never recurred. Evidently my guide had never heard of any blocking up. M'Diarmed's statement, however, proves that the place name of Weem was in his time (1794) believed to be derived from this and not from St Cuthbert's Cave, which is certainly not blocked up but remains in its original state as described in the Life of that Saint, as I shall now proceed to show.

St Cuthbert's connection with Weem is established by the Irish Life, which appears to have been known to the monks of Durham as early as the fourteenth century. Skene relates the connection thus:—²

"After the blessed youth Cuthbert had arrived in Scottish land he began to dwell in different parts of the country, and coming to a town called Dul [Dull] forsook the world and became a solitary. Not more than a mile from it there is in the woods a high and steep mountain

¹ Skene says, "St David seems to have superseded St Cuthbert here," and significantly adds, "the fair (of St David) was held in March." St Cuthbert's day is 20th March (*Celtic Scotland*, ii. p. 207).

² *Celtic Scotland*, ii. p. 206.

called by the inhabitants Doil-weme [Dull-weem], and on its summit he began to lead a solitary life, where he brings from the hard rock a fountain of water which still exists. Here too he erected a large stone cross, builds an oratory of wood, and out of a single stone, not far from the cross, constructs a bath, in which he used to immerse himself and spend the night in prayer, which bath still exists on the summit of the mountain."

The description here given still applies, only that the cave is about half-way up the rock, certainly not on the summit. On my visit above mentioned, Mr M'Lean also accompanied me to St Cuthbert's Cave.

It is of easy access: a winding path from the east end of the old church leads to the cave, which is just deep enough to afford shelter from rain, but open to a southerly gale, when it would be utterly untenable, hence doubtless "the oratory of wood" which Cuthbert is said to have erected, and which would presumably have afforded the shelter required. The stone bath, hollowed out of the rock, extends along the eastern side of the recess, and the "fountain of water" referred to in the legend is led in from the west side of the recess by a channel cut in the rock, which along with the formation of the bath may or may not have been the work of Cuthbert. The same may be said of the Latin cross cut in relief on a stone slab, and attributed to the Saint. At the time of my visit this cross lay on the shelving rock in front of the cave. The author of the *White and Red Book of Menzies* describes it as a "Celtic" cross, and says it stands upright in the bath, in which case it must have been so placed since my last visit. He gives an illustration of the cross, which shows no evidence of the cross being of Celtic origin.

With reference to the "oratory of wood," I may mention that the rock platform was partly enclosed by rustic wood framework, and I was told it had been always kept so by the proprietor, partly as a protection, because the place had been fitted up as a summer-house to which visitors could be taken; moreover, many also of the older inhabitants of the surrounding country used to visit the well for the water, which was believed to be endowed with healing qualities, and I have been told that small coins and pins were cast into the bath, and bits of rags hung on the bushes around by those votaries of health. I can speak for the pins and rags, but never saw any coins. Doubtless the bath would be carefully searched from time to time for any valuables by those to whom the movements of the votaries in question would be under constant espionage.

Before concluding, it seems desirable to consider the "St David" ascription, which I have already characterised as of modern origin; but the evidences on which the conclusion is based ought to be stated.

The connection of Cuthbert with Weem rests solely on the Irish Life

of that Saint. It is remarkable that Bede, who was born in the lifetime of Cuthbert, whose life he records, and must have been about thirteen years old when he died, makes no reference to the Weem connection. Skene, in discussing this point, suggests that certain persons to whom Bede states he submitted his manuscript, that they might read it and correct or expunge what they judged advisable, had deleted this portion of the manuscript. Moreover, it may be remarked, Bede tells nothing of the birth and parentage of the Saint, which the Irish Life professes to give, and it seems probable that the causes which operated to exclude reference to the Weem episode, led also to the absence of details affecting his nationality. Skene assigns to the ten years between 651, when Cuthbert removed to the monastery of Melrose, and the year 661, during which period Bede gives no particulars of Cuthbert's life, the events recorded in connection with Weem. The Life records that while residing at Melrose Cuthbert "was zealous in converting the surrounding populace, and frequently went out from the monastery, sometimes on horseback, but more generally on foot, and preached the way of truth to those who were in error. He was also wont to seek out and preach in those remote villages which were situated far from the world in wild mountain places and fearful to behold, and which, as well by their poverty as by their distance up the country, prevented intercourse between them and such as could instruct their inhabitants. Abandoning himself willingly to this pious work, Cuthbert cultivated these remote districts and people with so much zeal and learning that sometimes he did not return to his monastery for an entire month, remaining all the time in the mountains."

These references to "remote villages," and "wild mountain places up the country," go far to support the Weem tradition. Bishop Forbes (*Kalendars of Scottish Saints*) mentions Cuthbert's evangelising missions to the barbarous people in remote villages, but assigns the Weem episode to a more youthful period. Forbes gives Weem as one of Cuthbert's churches in Scotland, but quotes the very modern authority of the *New Statistical Account*, in support of a St David well and chapel at Weem, as owing their ascription to the monkish Laird of Weem, apparently unaware that this well and chapel are the bath and "oratory" of the Cuthbert tradition. He further expresses his opinion that this ascription as well as all other Celtic dedications to St David must be attributed to an Irish priest named Dabius or Davius, who had a Scottish connection. Now, all the Celtic David associations in Strath-tay are confined to the south side of the river Tay, whereas Weem is on the north side, where there is no proof that any such association ever existed.

The *Book of Menzies* ignores Cuthbert's connection with Weem, and claims cave, stone cross, bath, chapel on the rock, as well as the parish church for the so-called "St David Menzies," but allows that the Feile Daidh (David's Fair) was held on the opposite side of the river Tay before it was removed to Kenmore.

Mr Duncan Campbell, the author of the *Book of Garth and Fortingal* (Inverness, 1888), on the other hand, identifies the local St David with the patron saint of Wales, who he says "may have been at Finlarg, at west end of Loch Tay, for within about a mile is situated Cladh-Math-Dabhi, the churchyard of St David, the proper name being to the present time pronounced in Welsh fashion Davee." Besides the place-names mentioned, there is another, not anywhere noted so far as I can find, Dundavie, which conforms to the same pronunciation, a mile or two below Aberfeldy, also on south side of Tay. Campbell, who was a native of Glenlyon, and well acquainted with the district, says nothing about a St David ascription at Weem. He, indeed, while acknowledging the dedication of the church at Weem to St Cuthbert, ascribes it not to the hermitage-discipline in the cave at Weem Rock, but to the after policy of Adamnan, whose influence was strong, and still is much in evidence in Glenlyon, Dull, and Grantully. St Cuthbert was converted to the Roman Catholic views of Easter and the tonsure, and in his advocacy of these views joined actively in the establishment of the parochial system. If, as suggested by Bishop Forbes, the cave experiences of Cuthbert came in his early manhood, it seems not improbable that, as supposed by Skene, he revisited Weem during some of those Melrose excursions, of which we have been told, to "wild mountain places." In them he would have opportunity of advocating the new views, with little doubt seconded by Aidan, who was in favour of them, and whose influence extended to Glenlyon, where stood the church and churchyard of Inch-Aidan. This was the ancient name of the parish itself, "Kenmore being but a recent innovation which met with little popular acceptance until the residence of the minister was removed, and the church and churchyard of St Aidan had ceased to exist," the removal taking place about the middle of the eighteenth century. St Cuthbert died in 687. Adamnan, who was deeply imbued with the same views, and who survived Cuthbert for seventeen years, would find it a congenial task to take up here the advocacy of that movement which was at last effected in the era of Queen Margaret.

In further elucidation of the David dedication of Weem, it has been contended that it may be a question whether there are any David dedications at all in this district. That, in fact, they are assignable to a saint whose name is phonetically rendered as "Bhi," pronounced Vee;

the local pronunciation, which cannot be ignored, being not David but Da-vee, the "Da" being the Celtic form of "Mo," so common as a prefix in the names of early saints. Mr J. M. Mackinlay, in his *Ancient Church Dedications in Scotland*, identifies Dabhi with Mobhi, also an Irish saint. He says the latter had two dedications in Breadalbane district of Perthshire, but instead of the honorific "Mo" in the honorific "Da," producing the forms Dabhi and Davius, and he remarks in a note that in dedications to St Mobhi the accent is on the last syllable.

The *New Statistical Account* (Edinburgh, 1834-45) would seem to be the earliest literary reference to the ascription of the well and church at Weem to "St David." This bears out statements current among old people in the district in the middle of last century that the ascription to St David arose and "caught on" from someone having inadvertently used the term St David for Sir David¹—a sort of metathesis not uncommon in place-names. Dr Joyce (*Irish Names of Places*, second series, p. 22) cites a case in Ireland where an old church owing its name to an Irish Bishop Sanctan or Santan, who founded it, is now changed to St Ann, and the picturesque little graveyard and ruin is called "Kill St Ann" or St Ann's Church; near it is "St Ann's Well"; and an adjacent residence has borrowed from the church the name of "Ann Mount." The whole place has been, in fact, quietly given over to St Ann, who has not the least claim to it, and an old Irish saint has been dispossessed of his rightful inheritance; moreover, the error has been perpetuated in the maps of the Ordnance Survey. A still more remarkable instance, in this case a double metathesis, occurs near Leuchars, Fifeshire, where a place-name, Sandfurd or Sandford,² has become St Fort, and given that

¹ The "Laird of Weyme" is named in a Roll of the Names of Landowners in the Highlands and Isles, dated 1587 (*Collectanea de Rebus Albanicis*, the Iona Club, p. 35). He is, in a note, explained to be "James Menzies of that Ilk, or of Weyme, proprietor of certain lands in Breadalbane, Strathday, and Rannoch." Also, "the laird of Weym" is referred to (1512) in the *Rentall Dunkeldense*, Scottish History Society, second series.

² Dr Campbell (*Balmerino and its Abbey*) says: "Sandford, or St Fort, was written Saintfoord as early as 1446, according to Sibbald (*Hist. of Fife*, p. 262, ed. 1803), but it is doubtful if this spelling is that of the original document." The Doctor adds in a note, p. 490, "When, if ever, or where such a saint lived does not appear."

Alexander Nairne obtained a crown charter of Sandfurde in 1625. His initials, with the date 1647, appear on a stone panel along with a rhyming epitaph on a burial vault within a small triangular enclosure in what was known as the "Tomb Park," about 100 yards north from St Fort railway station. Sandford probably took its name from a ford on the Motray Burn, a sluggish stream close below the site of the old house of Sandford-Nairn, the foundations of which may yet be seen beneath the turf in the Tomb Park. The house would appear to have been of cottage form, since it is so referred to in a rhyming inscription along with the initials "A N" and date "1643" on a stone panel resembling that on the vault. The latter presumably formed the lintel over the mansion-house door. I have been told that it was carried off by a builder in Newport, and inserted above the entrance to a house there having crow-stepped gables, erected to serve as the "Dowager-house" of Tayfield. A drawing of this panel by the present writer is inserted in Campbell's *Balmerino and its Abbey*.

name to a station on the railway between Dundee and Edinburgh; and not only so, but this misnomer has in turn resulted in a small inn at the junction of cross roads in the near neighbourhood, kept by one Michael Irvine, and known popularly as Michael's Inn at St Fort, coming to be known throughout the whole district and far and wide as "St Michael's Inn," a wood near by has become "St Michael's Wood," and these names appear on the Ordnance maps; so that no less than two saints—one entirely novel to the calendar—have attained to an abiding hold in that district.

St David of Weem may be safely relegated to the same category of fictitious ascriptions.

II.

NOTES (1) ON THE DISCOVERY OF A GRAVE AT BALNEIL, NEW LUCE, WIGTOWNSHIRE, CONTAINING A PARTIALLY BURNT INTERMENT, A CINERARY URN, A BRONZE CHISEL, A BONE PIN, AND A BEAD OF VITREOUS PASTE. (2) ON A SOCKETED AXE OF BRONZE FOUND AT CAMBUSMORE, THE MOUND, SUTHERLANDSHIRE. By A. O. CURLE, F.S.A.Scot., Director of the Museum.

I. GRAVE AT BALNEIL.

While ploughing operations were in progress early in January of this year, in a field to the north-east of the steading of Balneil Farm, in the parish of New Luce, Wigtownshire, a Bronze Age burial was brought to light by the edge of a low rocky knowe, situated some 336 yards to the north-east of the byre of the farm. The burial was very near the surface, for its discovery was due to the plough, or the horse's foot, striking the bottom of a large inverted cinerary urn and revealing the cavity inside. The urn (fig. 1), which has now been restored, measures 15 inches in height, 11 inches in diameter at the mouth, and $5\frac{1}{2}$ inches at the base. It is encircled by two cordons, the one $3\frac{3}{8}$ inches below the rim, and the other $3\frac{1}{4}$ inches lower down the vessel. The type is not an uncommon one, and is placed by Mr Abercromby in Period Four of the Bronze Age, a conclusion as to period borne out by the associated relics. The urn had been placed in an inverted position over a heap of human bones only partially incinerated. These represent two individuals, and are dealt with by Professor Bryce in the subjoined report.

Associated with the interment was found a remarkably fine chisel of bronze (fig. 2, No. 1), measuring $4\frac{3}{8}$ inches in extreme length, furnished with a heavy tang, square in section, which accounts for 2 inches of the

whole length of the tool. The blade beyond the tang expands to form a shoulder on either side, and thereafter diminishing slightly for the greater part of its length again spreads to a fan shape at the cutting edge. The tool is unusually heavy, and has a thickness at most of $\frac{7}{16}$ inch. In part it is coated with a bright green patina, but where this has not formed the bronze is for the most part red, and in places has a bright golden hue. Its general aspect is that of a tool which has been cast but never completed for use. All over the surface are marks left by a file which was unfortunately employed when the relic first came to light. Viewed in profile, the blade appears beautifully tapered to the cutting edge. The nearest analogy I have been able to find to this species of chisel is one found at Yattendon, in Berkshire, illustrated by Sir John Evans;¹ but the latter differs in having projecting stops at the base of the tang in place of the definitely formed shoulders of the Balneil example. The tanged chisel from the Adabrock hoard, added to the National Museum in 1910,² which has a collar or stop ridge below the tang, is of the more usual type, and resembles examples from the Continent illustrated by Déchelette,³ and assigned by him to the fourth and final period of the Bronze Age. When the bones were being treated previous to examination, Professor Bryce was fortunate in discovering two additional relics both of which had apparently been subjected to fire. These were a bead of vitreous paste (fig. 2, No. 2) and a bone pin (fig. 2, No. 3). The bead is $\frac{3}{4}$ inch in diameter, and is of the quoit-shaped variety, the ring being triangular in section. It has been formed of an opaque vitreous paste, now, owing to the action of fire,



Fig. 1. Cinerary Urn from Balneil.

¹ *Ancient Bronze Implements of Great Britain*, p. 169, fig. 196.

² *Proc.*, xlv. p. 31, fig. 6.

³ *Manuel d'Archéologie*, "Archéologie Celtique ou Protohistorique," ii. p. 272, fig. 100.

rather vesicular in texture and of a bluish-grey tint. This type of bead has been found in England associated with a Bronze Age inter-

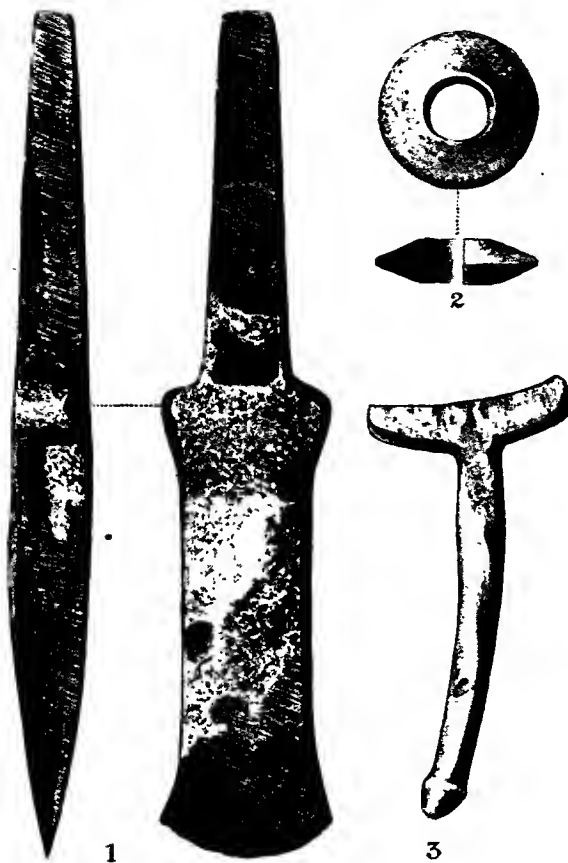


Fig. 2. Bronze Chisel, Vitreous Bead, and Bone Pin, from Balneil.

ment,¹ and a number of examples have been found in Ireland, but apparently without recorded associations.²

The bone pin measures $2\frac{1}{8}$ inches in length. It is, as far as I am aware, a unique object, in respect that the obtuse point with which

¹ *Arch.*, xxx, p. 330.

² A list of occurrences is supplied by Mr L. M'L. Mann in *Proc.*, xl, p. 400, f.n. 1.

it is furnished shows that it was not fashioned to pierce a fabric. The actual form of the pin, with curved cross-piece for a head 1 inch in length, giving the object the appearance of a crutch, finds an analogy in a pin from the lake dwelling of St Blaise in Switzerland.¹

On the pin itself, though not apparent in the illustration, there occurs at about half an inch below the top of the head a marked hollow which has evidently been produced by friction. This possibly affords an index to the use to which it has been put, and suggests employment as a dress-fastener in a manner quite familiar at the present day, in regard to the fastening down of lids of hampers where two loops are used, one being passed through the other and kept secure by a pin. The cross-head would have prevented the pin so employed from falling out; the friction of such a loop would have produced the hollow referred to.

We are much indebted to the Rev. R. S. G. Anderson, at New Luce, for having brought this interesting find to our notice, and for having taken much trouble to supply the necessary information; also to Mr James M'Quistin, the farmer of Balneil, who very kindly presented the relics to the National Museum.

REPORT ON BONES FROM INTERMENT AT BALNEIL.

By Professor T. H. BRYCE, F.S.A. Scot.

The deposit of bones from this burial shows all the characters of a burial after cremation. Incineration, however, has not been so complete as usual, and some of the vertebræ have been preserved almost entire and only partially burnt. A considerable number of phalanges of fingers and toes have remained entire, but all the long bones of the extremities, the ribs, and the skull bones are completely burnt, and reduced to small fragments. The deposit is a specially large one, and I made a careful search through the fragments to discover if they represented more than one body. I was able to identify identical fragments from two separate mandibles; and a scrutiny of the phalanges and portions of metacarpals and metatarsals proved that one of the individuals had been of slighter build than the other. Both individuals must have been of full adult age; but beyond the fact that some of the phalanges are thin and delicate, suggesting that they belonged to a female hand or foot, there is nothing to indicate sex.

¹ Munro, *Lake Dwellings of Europe*, p. 41, fig. 8.

II. SOCKETED AXE OF BRONZE FROM CAMBUSMORE,
THE MOUND, SUTHERLAND.

The axe here illustrated was recently found in quarrying at Cambusmore, and was sent to the Museum for inspection. On account of the herring-bone ornamentation which has been incised on it around the



Fig. 3. Socketed Axe from Sutherlandshire. ($\frac{2}{3}$ nat.)

socket, it is here illustrated. Though this type of ornament is not very uncommon on the sides of the flanged axes and palstaves, I do not know of another instance of its occurrence on a socketed example. This appears to have been an unassociated find.

III.

NOTES ON SOME STONE AND FLINT IMPLEMENTS FOUND NEAR
DRYBURGH, IN THE PARISH OF MERTOUN, BERWICKSHIRE.
BY J. M. CORRIE. F.S.A. Scot.

The parish of Mertoun, Berwickshire, has yielded no inconsiderable number of objects of archæological interest, and some of these have already been figured or described in standard works or in the published *Proceedings* of this and other kindred Societies. There are, however, in the hands of private collectors, many that have never been recorded, and in the present contribution I desire to direct attention to some of the more interesting objects that I have myself obtained, at intervals during the last four or five years, from the ploughed lands of a restricted area in this parish.

About a mile beyond the village of Newtown St Boswells, in the direction of Dryburgh Abbey, a public footbridge carries us from Roxburghshire into Berwickshire. Immediately after crossing it we come to what is popularly called "The Old Monk's Road," and if we proceed along it, in the direction of the ford across the Tweed, we reach the haugh-lands of Dryburgh. To the right the ground rises abruptly to a considerable eminence, crowned by a colossal statue of William Wallace, erected by the eleventh Earl of Buchan in 1814. On the surface of these haugh-lands, and on the fields adjacent to the monument, flint and other silicious materials occur in considerable quantities, and numbers of primitive implements and other objects of antiquarian interest are annually exposed by the plough.

Flakes and spalls are, as might perhaps have been expected, the most numerous relics. They exhibit considerable variation as regards size, material, and flaking, and a good many of them, as indicated by their blunted edges, appear to have been used as knives or scrapers without further chipping. The material is mostly flint, chert, or quartz, but it includes also one or two interesting examples of pitchstone. The largest flake found measures 2 inches in length. In some cases the flakes exhibit on their surfaces the scars of other flakes, and in others again the outer coating of the nodule is apparent and indicates that a proportion of the flakes and spalls has been taken from weathered or water-rolled pebbles of variable texture and description. Some of the flakes carry the bulb of percussion or conchoidal fracture on the flat or inner face, and many show evidence of secondary treatment.

Cores and nuclei of similar materials and of varied size and character

have been found in considerable numbers. For obvious reasons no two are exactly alike, and special attention is directed to the interesting examples with a characteristic shoulder. A few of the specimens show the crust of the pebble, and others exhibit distinct evidence of having been subjected to the action of fire. Chert pebbles have been frequently picked up, but unworked nodules of flint have not been observed, and this circumstance seems to suggest that the flint was brought to the locality in an already broken or partially flaked condition.

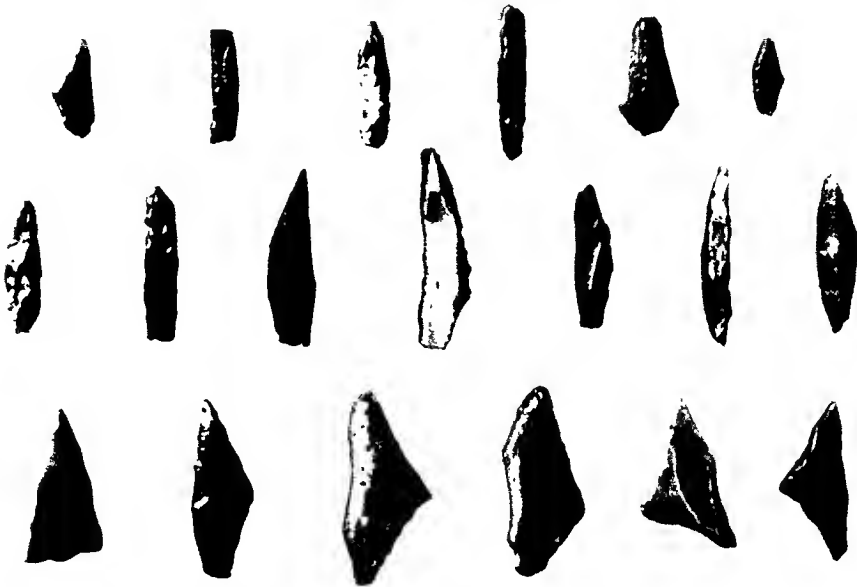
Of manufactured flint-like implements scrapers are by far the most abundant, and while the series includes most of the well-known types in a variety of materials, it possesses one special characteristic in the smallness of the examples. The tiny specimens, averaging not more than half an inch in diameter, of which there are twenty-eight out of a total of sixty-two, are carefully fashioned, and some show traces of calcination. Associated with the scrapers we should, perhaps, include a series of what may be termed notched flints. Specimens of this class are by no means uncommon elsewhere, and in this collection they are represented by twenty examples. They vary greatly in shape, but are usually portions of clean, well-struck flakes, and at first some of them might easily be passed over as ordinary waste pieces. A closer examination, however, reveals the fact that at the ends, or sides, or both, there are small semicircular notches, of varying size, carefully flaked out to a cutting edge from one side only. It has been suggested that such tools were used in the making or straightening of arrow-shafts or in the fabrication of bone pins and needles.

Arrowheads are uncommon. Two specimens only have been found, and they are both of the barbed type and of very small size. The smaller of the two, which has been subjected to the action of fire, was found on the high-lying grounds in association with a scraper, also calcined, and, while the reverse side shows slight traces of secondary working round the edges, it appears on the upper side only to have been subjected to surface flaking. It has a somewhat blunted point, short barbs, and very thin tang. The other, of a more elongated type, with slightly curved edges and short barbs, has been made in similar fashion, the upper side only being beautifully surface-flaked and the reverse trimmed only round the edges. It was found on the haugh-lands.

Reference has already been made to the fact that many of the flakes found on the site appear to have been used as knives or scrapers without further chipping, but in addition to these there are a few knives that afford evidence of special care and beauty of workmanship.

Of all the artefacts of flint or other silicious material, however, that have been recovered from this area, by far the most interesting and

important are the so-called "pigmyes." These remarkable and delicately manufactured implements of crescent, triangular, pointed, and rhomboidal forms, to which the term "pigmy" was first applied by the late Rev. Reginald A. Gatty, have been known to archæologists for many years. Priority of discovery appears to belong to the late Mr Thomas Honeywood of Horsham, who, as the result of many years' close observation, accurately described the most common type of pigmy in the



Examples of Pigmy Flints found near Dryburgh.

following terms: "The next type is very curious. They are small, generally about one inch in length, and about a quarter of an inch in width, and appear at first sight to be mere chippings or waste pieces, but on examination we find evident proof of design in their manufacture. Of this type I have dug up above one hundred specimens, and every one alike, having a sharp point at the end, also a sharp cutting edge on the right side; but on the left side they are thick and chipped away, evidently for some special purpose. . . . What their use was it is impossible to say, but . . . these specimens might have served as arrow-points."¹

They were later noted by the late Mr A. C. Carlyle, of the Archæo-

¹ "Discovery of Flint Implements near Horsham, in St Leonards Forest," *Sussex Arch. Coll.*, 877, p. 180.

logical Survey of India, who discovered them in the caves of the Vindhya Hills, and almost simultaneously they were found by the Rev. R. A. Gatty, and by Messrs Law and Horsfall on the Pennine Chain in England.¹ They have since been met with in many widely separated North African and continental areas, and further discoveries have been reported in England from Scunthorpe, Lincolnshire; Lakenheath, Cambridgeshire; Hastings and Brighton, Sussex; Sevenoaks, Kent; Enstone, Oxfordshire; and the Isle of Man: in Ireland they have been found in the Isle of Aran: and in Scotland certain forms have been found at Shewalton Sands, Ayrshire, and on several sites in Roxburghshire and Berwickshire, but hitherto, we believe, specimens of the well-defined Indian crescentic types have only been recorded for one locality.² They are usually exceedingly small, sometimes being less than half an inch, and very rarely exceeding an inch and a half in length, and they are characterised by special forms and a unique method of working the flint, supposed by some archæologists to have been effected by means of a slot in a piece of bone very like the wards in a key. Various purposes have been assigned to these beautiful little implements, but the question of their use is extremely difficult to answer, and so far no conclusive explanation has been given by the authorities. Some have supposed that they were tied to the points of arrow-heads; others that they formed lateral barbs of harpoons; others that they were tattooing instruments; others that they were connected with some domestic work of women, such as carding wool, cloth, or hide: others that they were fish-snags, or borers for making holes in skins or other harder substances like shell; others that they were used as needles, the flints being affixed to the cord or fibre by resinous gum in much the same manner as the modern shoemaker fixes his birse; others that they were carving tools; and others again that they were employed in the fabrication of bone pins, needles, etc. These suggestions as to their use are, at present, largely based upon conjecture; and as harpoon heads of stag's horn set with sharp pieces of flint along two edges have been found in Denmark, and small perforated shell discs have been found in Spain, and rubbed-down pieces of "geru" or red hæmatite, with rounded stones for pounding the mineral into a pigment, have been found in India in association with pigmies, we need not assume that their use was in every case uniform. Indeed, it appears obvious, in view of the highly specialised forms of the different types, that each class was designed for some special purpose; and whatever

¹ *Chambers's Journal*, May 1905; and *Proc. of the Yorkshire Geolog. and Polytechnic Soc.*, 1882.

² "Pigmy Flint Implements: Their Provenance and Use," 1913. Reprinted from the *Trans. of the Lancashire and Cheshire Arch. Soc.*, vol. xxx. p. 14, and footnote p. 22, and Report of the British Association Meeting at Dundee, 1912.

these uses may have been, it is clear that the makers on the Vindhya Hills and the makers at Dryburgh had the same ideas in their minds. These delicate little implements were believed by some archæologists to be the work of a pigmy race, and although the characteristic smallness of all the Dryburgh flints may appear to make the pigmy series all the more complete, I do not think it necessarily implies a relationship between the size of the implements and the size of the makers. The theory, indeed, appears to be wholly negatived when we remember that the actual remains of prehistoric man hitherto discovered in this country are mostly of a normal type. No area has yet been found that yielded only subnormal types. It is doubtful even if we would be justified in identifying them solely as the product of a particular race or wave of population which has migrated westward in the directions in which they have been found, because, as Sir John Evans has pointed out, they may merely show that some of the requirements of daily life and the means at command for fulfilling them being the same, tools of the same character have been developed irrespective of time or space. In the Dryburgh series—the first of which was found on 25th December 1911—all the forms, including a single rhomboid, a type always rare in English collections, are represented, and they exhibit the same variation in regard to the material from which they are fabricated as do the other products of the site previously described. This is an important point, and I lay stress upon it because it may help to determine the age of these pigmies, inasmuch as it seems safe to assume that, in consequence of this feature, they must be regarded as belonging to the same period as the other flints with which they are found associated as surface finds. With regard to the site itself there is, in this connection, a special interest, because it presents a wonderful parallel to other stations both in this country and on the Continent, where similar pigmy flints have been found in abundance. In a pamphlet entitled "Observations on some very small Implements of Flint," the writer, Monsieur de Pierpont, gives a full description of his discoveries on the high lands above the river Meuse, and he states that "these plains are protected on one side. . . . Polished flints are absent. Great flakes and all that defines the most flourishing Neolithic period are absent. The little points only are found." The description is very similar to that given by the late Rev. Reginald A. Gatty with regard to the Scunthorpe finds. He says: "Scunthorpe may be described as a sandy district. . . . The ground rises rather abruptly"; and "It is interesting to observe again the absence of large tools." These accounts, and many others that could be quoted, are equally descriptive of the Dryburgh area, where, as we have already indicated, the ground is

of a sandy character, rising abruptly to a considerable eminence, and with an entire absence of large or polished flints.

The objects previously described are the industrial products of man's manipulative skill, but there are other varieties of stone implements, such as hammers and anvils, that serve to illustrate the means by which he accomplished these results. At first these implements would be hardly distinguishable from natural objects, but in the case of all the Dryburgh examples the pittings and abrasions are so distinct as to leave no doubts as to the purposes for which they had been utilised. A fine anvil stone $8\frac{1}{2}$ by 5 inches, with pittings on both sides and the edges abraded, was picked up on the haugh-lands on 21st March 1913, and close beside it lay a neat little core of very dark chert. A second example, found on the higher ground on 1st December 1914, is smaller, but the abrasions are equally clear and indicate use also as a hammer stone, evidently for finer work. The hammer stones are usually river-worn stones, and one specimen found on the haugh-lands, on 22nd December 1911, illustrates very clearly the method of grasping the tool, that portion of the stone which was held in the hand being indicated by the absence of abrasions. We have also an example of the stones with cavities on each side to afford a firmer grip for the finger and thumb. These form a numerous and well-defined class.

But in addition to these implements we have others that are in no way associated with the operations of the flint-worker. Among these are stone-sinkers, polishers, or smoothers, and stones chipped wholly or partially round the edges from one face only. Of these objects the waisted stones, generally supposed to have been used as net or line sinkers but which, according to one authority, may have served a variety of purposes, have been found in large numbers. They are usually, but not always, discovered in the vicinity of water, and they occasionally have two or more notches in each side. They vary considerably in size and weight, one of the specimens measuring only $\frac{3}{4}$ inch in length, $\frac{1}{2}$ an inch in breadth, and weighing less than a quarter of an ounce; and others measuring 9 by 4, or $7\frac{1}{2}$ by 5 inches, and weighing 2 lbs. $3\frac{1}{2}$ ozs., and 1 lb. 15 ozs. respectively.

The polishers or smoothers of quartz, of which there are twelve examples, are commonly worked or polished to a convex surface on one side, and occasionally also on two sides. They are identical in form with those found by me on the site of the Roman fort at Newstead, near Melrose, and illustrated and described in a previous paper to this Society;¹ so that, beyond recording their presence on the Dryburgh area, it will not be necessary to describe them further.

¹ *Proceedings*, vol. xlviii. (1913-14), pp. 339, 340.

The chipped stones are made from ordinary flattish river-worn stones, and the characters that give the stones their main interest are such as must have been imparted to them by artificial means. In the partially chipped examples there is a marked difference of form between the two sides of the stones. The one is smoothly rounded by the action of water and by friction against other stones, while the other is carefully chipped from the one face. The purpose for which they were intended is not clear, but they would prove useful implements in the operations of skinning, and, I believe, something of a similar kind was, at one time, in use among the native tribes of India and North America for that purpose. Those chipped wholly round the edges are roughly circular, and similar in type to the well-known specimens from the Culbin Sands. It has been suggested that they served the purpose of pot-covers.

Among other objects that belong to a comparatively recent date, we have a fine example of a mould for casting buttons of lead or pewter. It is made of slate, somewhat rhomboidal in shape, and has two very finely engraved matrices of elaborate design measuring 1 inch and $\frac{7}{8}$ inch in diameter respectively on the one side, and a single, slightly imperfect, matrix measuring $\frac{5}{8}$ inch, also of intricate design, on the other side, which has been somewhat mutilated at one end by the plough. These moulds were used both as open and closed moulds, but in the latter case they were provided with small stud-holes or notches for guiding and fixing the component part—the cover (*cf.* Graham Callander in *P.S.A. Scot.*, vol. xlvii.). The Dryburgh specimen is one of the open type, and it should probably be assigned to the seventeenth century.

In seeking to determine a chronological position for the silicious implements, we notice first of all that throughout the entire series similar materials, from which to fabricate them, have been employed, and this feature leads me to believe that they are mutually related and contemporaneous. The presence of the characteristic shoulder cores and minute working both point to a very early period, and although it has been demonstrated that cores and implements of the same types as these Dryburgh examples were made on the Continent during the late Palæolithic Age, we find here that, in keeping with several areas in this country, there is an admixture with tools, *e.g.* barbed arrow-points and polishers, of a somewhat later period, and even with relics of more modern times.

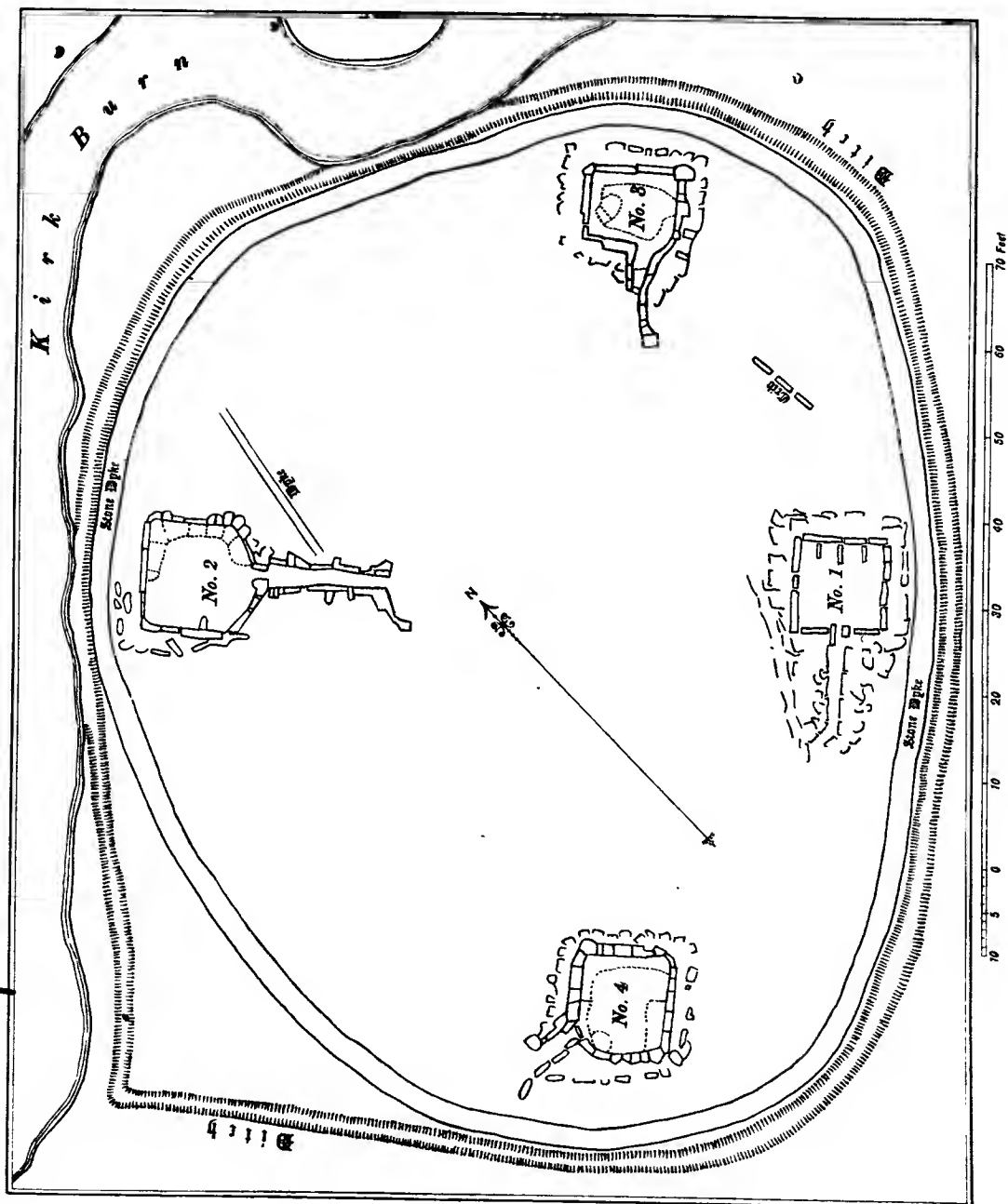
IV.

THE EXPLORATION OF THE SITE KNOWN AS THE KIRK STONES OF STROUPSTER, IN THE PARISH OF WICK, COUNTY OF CAITHNESS. BY JOHN NICOLSON, CORRESPONDING MEMBER.

About a mile SSW. of Stroupster there rises out of the moorland a green mound some 50 yards in length by 30 yards in breadth, bearing on its surface the remains of four structures. None of these bear any resemblance to an ecclesiastical building, but the name, the Kirk Stones, has possibly been acquired by reason of the many large stones scattered about and set on edge on the knoll. On the north a small burn flows by, and on either side of it, over an approximate extent of 6 acres, there may be observed on the heather the marks of cultivation of former times. The foundation of a turf-built homestead over 50 feet in length, adjacent, probably marks the site of a shieling. Two chains east of the burn is what appears to be a grave marked with a headstone about 8 inches above ground and a footstone just level with the surface. The top of the knoll is surrounded by a wall containing the four structures above mentioned (fig., Nos. 1, 2, 3, and 4). The most conspicuous of these (No. 1), situated towards the south side of the mound, was partially excavated many years ago by Mr Samuel Laing,¹ who referred to the site as the Moorland Mound. This excavation was subsequently completed by Sir Francis Tress Barry, and the site was further visited and described by Mr A. O. Curle in 1910 on behalf of the Royal Commission on Ancient Monuments (Scotland).² Mr Curle's description may here be quoted: "In all there are the remains of four structures, in which large flat slabs have been freely used to face the inner sides of the walls. The most conspicuous building near the centre of the mound has been rectangular, with a wall some 4 feet 6 inches in thickness enclosing an area nearly 11 feet square. This has been entered by a passage from the WSW. near the centre of one wall, 13 feet in length, 2 feet wide at the inner end, and slightly wider at the exterior. . . . Against the back or ENE. wall, in the interior, are set three slabs edge-on to the wall, the end slabs 2 feet and 3 feet distant from either side, and 1 foot 5 inches and 3 feet 4 inches apart from the centre stone. Two of them are about 2 feet in height, and one 1 foot 6 inches, and they project outwards from 2 feet 3 inches to 3 feet." On excavation Mr Laing reported the finding of a row of boulders forming a bench, or bed, along the wall on each side, and he obtained, *inter alia*, some fragments of

¹ *Prehistoric Remains in Caithness*, p. 36.

² *Report, County of Caithness*, No. 581.



Plan of the Kirk Stones of Stroupster.

wheel-made pottery, one of the pieces having a coarse blue glaze on it. From time to time during the last year I have visited the spot, and bit by bit cleared out the remains of the three other structures (fig., Nos. 2-4); but though I was very anxious to find relics, I got only some small fragments of limpet shells, but not even the smallest trace of pottery. The site No. 2 measures about 10 feet across, and is entered by a long passage with a double turn at the outer end. Two door jambs contract the width of the passage at its inner end. Along one side of the chamber is a narrow ledge or scarcement on the top of which a fire has been kindled. On the opposite side a single slab set on edge projects from the wall. From the outer end of the passage a small dyke runs off in a north-westerly direction. No. 3 has been a small structure measuring in the interior only some 8 feet by 6 feet. Around the sides there are the remains of a scarcement from 8 inches to a foot in breadth, and against this on the west side, and separated by a large stone set on edge, is the site of the fire. Two floor levels were observed, the lower in the centre sunk about 8 inches. There has been an entrance passage, which has been paved, some 10 feet in length, now incomplete on one side. No. 4, also a small structure, has measured some 8 feet square in the interior. Along two sides runs a scarcement 7 to 9 inches in height and a foot in width, and extending for a distance of some 3 feet along the east side is a broader bench with a height of 1 foot 4 inches and a width of 1 foot 7 inches. At the one end of the front of the latter is a large stone set on edge, deeply fixed in the clay and projecting above the upper surface of the bench. There was evidence of three floors on an average of 10 inches apart. The latest of them was close to the surface, and had a large quantity of ashes spread over it. The next occurred at the level of the bench; in the centre of it was a large flagstone, and from it a pestle-like stone abraded at the ends was recovered. The position of the fireplace was immediately to the right of the door on entering. A great mass of shells lay along the side and at the end of the bench. The entrance passage opens out from the south-west corner of the building: it is paved, and lies at a level of about 1 foot higher than the floor, which is reached by a step.

The greatest height of the walls of these structures as remaining is about 3 feet. The batter on the outer face of the wall and the number of small stones found in the interior cause me to think that the roofing may have been of the beehive form.

I am much indebted to Mr John Mathieson of the Ordnance Survey for drawing from my sketches the plan here reproduced.

V.

THE ROMAN CAMPS AT RAEDYKES AND GLENMAILEN.

By GEORGE MACDONALD, C.B., F.B.A., LL.D., F.S.A. Scot.

A year ago I was able to lay before the Society an account of certain excavations which a Research Grant from the Carnegie Trust for the Universities of Scotland had enabled me to make along the line of the Roman Wall from Forth to Clyde.¹ In normal circumstances this investigation would ere now have been completed. But, since the momentous autumn of 1914, progress has of necessity tended to become increasingly slow; in the present national emergency it seems wrong to ask even a single workman to devote his energies to unproductive labour, except on the rare occasions when seasonal conditions preclude the possibility of more useful employment. It is true that the thread has not been lost. On the contrary, a good deal of interesting material is gradually being accumulated. In the meantime, however, the further report which I had hoped to be in a position to bring forward must be postponed. I propose to substitute for it a brief statement of the results obtained in a kindred enterprise, the means for which were supplied through the same munificent benefaction.

Professor Haverfield long ago suggested that information of real importance for the history of Roman Scotland could in all probability be secured by the organisation of what he termed an excavators' 'flying column.' The idea was that a number of sites, on which the presence of the Romans was suspected, might be visited and a few exploratory cuttings made on each. In many cases a comparatively brief examination would not improbably suffice to determine once for all the question of origin, while it was just conceivable that here and there a stroke of good luck might produce fairly definite evidence of date. Although the difficulties in the way of forming such a flying column have so far proved insuperable, the principle underlying the suggestion was put into practice in July 1913 at the camp of Glenmailen near Ythan Wells, and again in the following summer at the camp of Raedykes near Stonehaven. On the former occasion Professor Haverfield was fortunately able to be on the spot himself and to take a leading part in the operations. For the work at Raedykes I alone was responsible. In the discussion and description that follow, it seems preferable to deal with Raedykes first.

¹ *Proceedings*, 1914-15 (vol. xlix.), pp. 93-138.

I. RAEDYKES.

This camp, whose name is variously spelt as Raedykes, Raedikes, Readykes, Re-dykes, and even Rhé-dykes,¹ lies in the parish of Fetteresso in Kincardineshire, its defences enclosing the greater part of the Garniehill or Garrison Hill, some three miles to the north of Stonehaven. As one moves north through Strathmore, the range of the Grampians draws nearer and nearer to the coast. Beyond Stonehaven the sea and the mountains almost meet, so that for a considerable distance the railway has to cling to the top of the cliffs in order to find a reasonably easy passage. Garrison Hill stands among the rolling uplands, about three miles back from the beach. The view from the highest point (628 feet) is singularly picturesque, particularly towards the west, where one looks up a broad valley to the mountains of Deeside, or again towards the east, where the eye sweeps over the moor and up the long slope of the Kempstone Hill to catch the distant sparkle of the sea and follow it south to Stonehaven Bay. The surface of the hill itself is broken and irregular. In that respect the position is one which a Roman general would hardly have occupied except under stress of circumstances. Any Roman camp pitched there would emphatically have been one of those *quæ in loco necessario [constituuntur], unde et necessaria castra dicuntur*.² We do not know who rediscovered it, but its earliest mention seems to be that in Maitland's *History of Scotland*, published in 1757. The description there given³ may be quoted in full:—

“This camp is about three quarters of a mile square, or three miles in circumference, fenced with a high rampart and a very deep and broad ditch; and each of the gates, which are six in number, are fortified with a rampart and ditch, at the distance of about twenty-four yards without the said gates. This is the largest Roman camp I have seen, or can learn that there is in Scotland.”

Like so many eighteenth-century antiquaries, Maitland was hot on the scent of Mons Graupius, and was confident that it had been run to earth at last. He believed that Raedykes was Agricola's camp, and that “there is not the least room to doubt of this place's being the spot whereon the battle was fought.” Just twenty years after the appearance of Maitland's *History* we find the then proprietor, Mr Robert Barclay of Urie, keenly interested. It is possible that his attention was drawn to the matter by certain chance discoveries made about this time in the immediate neighbourhood. A contemporary writer tells us that, when stones were

¹ Professor Watson, whom I have consulted, writes that the etymology is difficult. He suggests, however, that the name may possibly be the Englished form of a Gaelic (*an*) *Ràth Dìge*, the fosse-rath, or “earthen fort with a ditch.” Other variants are Ree-dikes and Ri-dikes.

² Hyginus, *De Mun. Castr.*, 56.

³ Vol. i. p. 202.

being carted off for enclosing a field, "several urns were turned up," while "in a moss, hard by, two Roman *hastæ* were found entire, and several others in a decayed state."¹ However that may be, in the summer of 1777 Mr Barclay, who was a prominent public man and long member of Parliament for the county, carefully examined the site in company with General Robert Melvill and "his respectable friend Lord Monboddo."² In the following year the band of inquirers received a fresh recruit in the person of Mr John Stuart of Inchbreck, afterwards (1782) Professor of Greek at Marischall College, Aberdeen, who surveyed the ground and produced a plan of the enclosure.³ Finally, in 1784, the eccentric founder of our Society, Lord Buchan, took the subject up, doubtless at the instance of Mr Barclay, who seems also to have been responsible for the enlistment of Professor Stuart.

As a result of all this activity we have quite a considerable body of 'literature' with Raedykes as its theme. It is noteworthy that none of the contributors accepted Maitland's view as to the enclosure being the veritable camp which Tacitus describes, an attitude of mind which is probably to be accounted for by the influence of Melvill, whose authority would naturally carry great weight. When this distinguished soldier and student of military history was brought upon the scene in 1777, his verdict was quite uncompromising.⁴ "From every circumstance," he came to the conclusion that the camp at Raedykes "could not be *that* occupied by Agricola's forces immediately before the battle." So sweeping a declaration might be interpreted as a refusal on the part of Melvill to entertain the idea of the entrenchment being of Roman workmanship at all. But it is at least equally possible that he took the Roman origin of Raedykes for granted, and that his words mean no more than they say. At all events, in so far as he condescends upon details, his main objection seems to be to the theory that the actual battle took place on the Kempstone Hill: he "finds himself obliged to conjecture, both from the locality and the remains, that the conflict there has been between the Scotch and the Danish, or other northern invaders."

Scottish lairds have always displayed a not unnatural reluctance to relinquish the ownership of the battlefield of Mons Graupius, and Mr Barclay was no exception to the rule. He continued to believe that the struggle had taken place on the Kempstone Hill. But he did yield

¹ Francis Douglas, *A General Description of the East Coast of Scotland from Edinburgh to Cullen, etc.*, p. 261. The book was published in 1782, and the discovery is said to have taken place "some years ago."

² See Gough's edition of Camden's *Britannia*, vol. iii. (1790), p. 416*, footnote, for an account of this visit.

³ See *infra*, p. 325.

⁴ See Gough's Camden, *l.c.*

an important point to Melvill. He abandoned the notion that it was from Raedykes that the troops of Agricola had issued to measure swords with the host of Galgacus. Arduthy, two or three miles nearer Stonehaven, seemed to him to satisfy the conditions much better, and in the eighteenth century there were still visible there the remains of entrenchments, long since vanished, out of which it required no great effort of imagination to reconstruct a Roman camp. Raedykes retained its Roman character, but its existence now demanded a fresh justification. Nor did that prove hard to discover. "The Roman general," it was suggested, "might, for various reasons, have been unable to pursue the advantages he had gained, and chosen to encamp upon the *Garniohill*, or *Raedykes* . . . an eminence which commands a prospect of the whole neighbourhood."

The views just summarised were set forth at length in a communication addressed by Mr Barclay to Lord Buchan, and subsequently printed in *Archæologia Scotica*.¹ Although the communication is undated, we know that it was read at a meeting of the Society on 11th January 1785,² and there is good reason to believe that it was penned but a few days previously. Some four weeks later Lord Buchan utilised it as the basis of the second of two letters which he addressed to Nichols, the publisher, over the fictitious signature 'Albanicus.' Next year Nichols printed both in No. xxxvi. of the *Bibliotheca Topographica Britannica*³ under the heading, "Remarks on the Progress of the Roman Arms in Scotland, during the Sixth Campaign of Agricola." In the second letter, which is dated 8th February 1785, 'Albanicus' intimates that the local information which forms its groundwork had reached him after his first letter was written—that is, after 10th December 1784. The most probable date for Barclay's communication is therefore December 1784, for that the local information referred to is identical with the communication from Barclay will not be doubted by anyone who places the two documents side by side.

A large part of the second letter of 'Albanicus' is, in fact, neither more nor less than a *réchauffé* of what Barclay had said. The thesis maintained is identical. Indeed, the very language is often the same. The illustrations, however, are new. Barclay's communication to Lord Buchan had been accompanied by a "rude sketch" of the surrounding country, which is here reproduced as fig. 1. An "exact plan" of the camp itself was promised, it being explained that in the meantime no proper measurements could be taken "on account of the depth of the snow." The 'Albanicus' letters in the *Bibliotheca* are illustrated by three plates. The first of these is a map showing Scotland according to 'Richard of

¹ Vol. i. pp. 565-70.

² *Op. cit.*, vol. iii., Appendix, p. 157.

³ Pp. 1 ff.

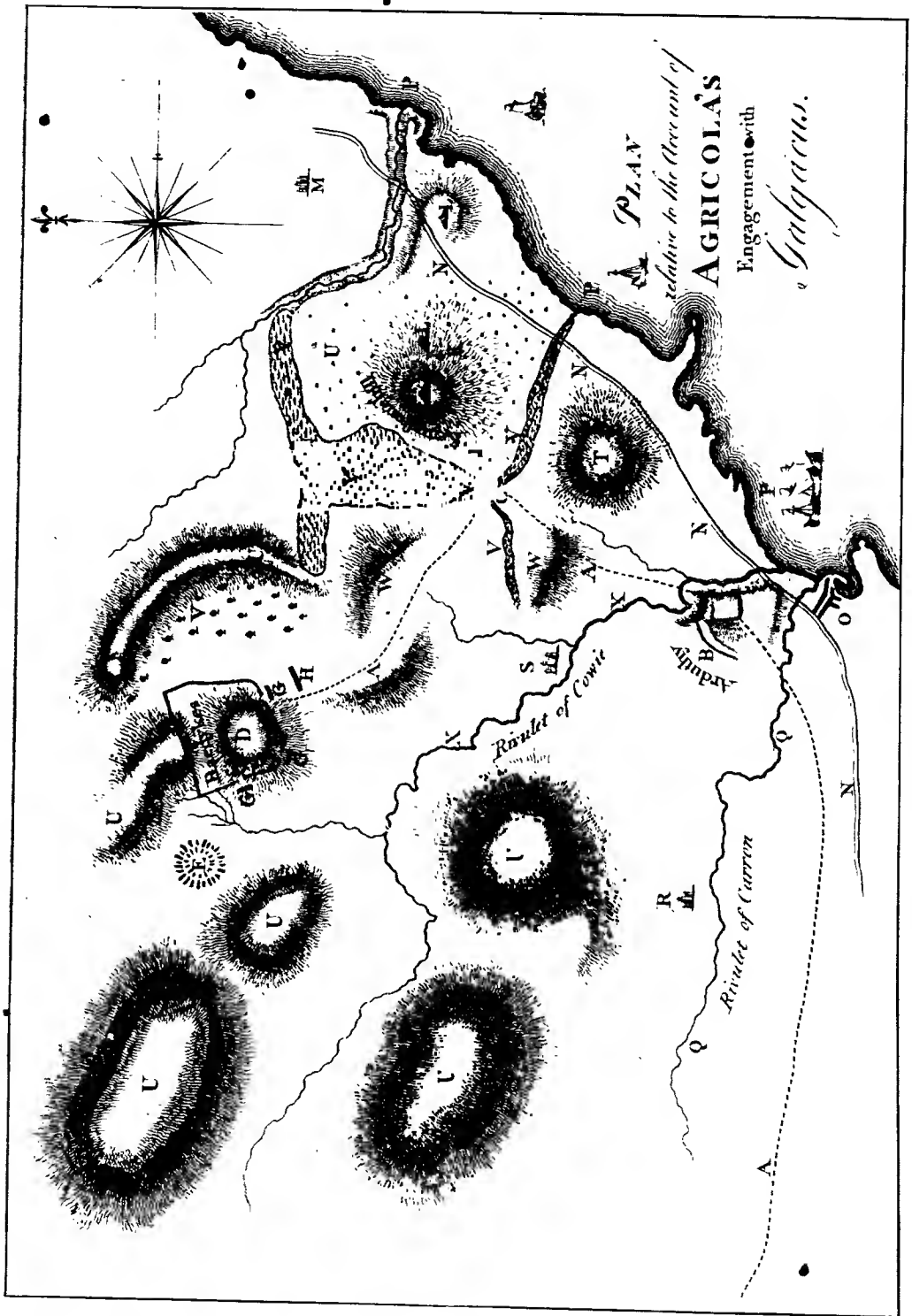


Fig. 1. Sketch of the Country round Raedykes, from *Archæologia Scotica*, vol. i.
(For the lettering, see p. 322 *infra*.)

Cirencester,' which need not further concern us. The second is an improved and slightly extended edition of Barclay's "rude sketch," the improvement consisting in the substitution of what will turn out to be a fairly accurate outline of Raedykes for a very rough square. As this plate gives a good general idea, not only of the relative position of the camp, but also of its shape, and as it furnishes a valuable clue to the solution of a problem we shall have to face presently, it is reproduced here as fig. 2. The dotted line (A A A) represents the supposed route of the Roman soldiery from Strathmore to their camp at Arduthy (B), thence to the position (C) which they took up before the battle, and finally to Raedykes (D), where they rested on their laurels after the victory was won.¹ The third *Bibliotheca* plate will be referred to later.

Meanwhile Professor Stuart's share in the discussion calls for a brief notice. As has been already stated, he made his first acquaintance with the site in 1778, when he surveyed the ground and drew a plan of the camp. The opinion he arrived at then—an opinion which was confirmed by many subsequent visits—was that Raedykes was not Roman at all. It was a "camp of the Caledonians . . . totally unlike those of the Romans in Scotland, which are universally rectangular, whereas in this one there is not a single right angle in its whole extent." Its attribution to the Romans was due to the fact that it was "an awkward imitation of their mode of encampment, fortified with a wall and ditch, and having several gates with traverses in front of them." This reads like the language of an antiquary in whom there lingered no trace of Roman fever. But, with it all, Stuart could not succeed in freeing himself from the spell of Mons Graupius. He was as unwilling as Barclay had been to acquiesce in Melvill's criticism. For him, too, the Kempstone Hill remained the battlefield, and the fragmentary entrenchments at Arduthy were transfigured into the camp of Agricola. Raedykes, however, was surrendered to Galgacus. It became the camp in which the Caledonian chieftain had delivered, or at least composed, his memorable oration.

Such was Stuart's theory as expounded in his "Observations upon the Various Accounts of the Progress of the Roman Arms in Scotland, and of the Scene of the Great Battle between Agricola and Galgacus," published in *Archæologia Scotica* in 1822.² This paper does not seem to have been read to the Society in the form in which it was printed. But it doubtless embodies the substance of a communication entitled "Observations on some Remains of Roman Antiquity in the North of Scotland," which

¹ It would be mere waste of space to supply a complete 'key' to the lettering. P.P, for instance, is 'the sea,' and U U U 'the Grampian Hills.'

² Vol. ii. pp. 289 ff., reprinted in the author's posthumous *Essays* (Aberdeen, 1846), pp. 69 ff. Stuart's theory has recently been revived by Mr Crabb Watt, K.C., in *The Mearns of Old* (1914), pp. 64 ff.

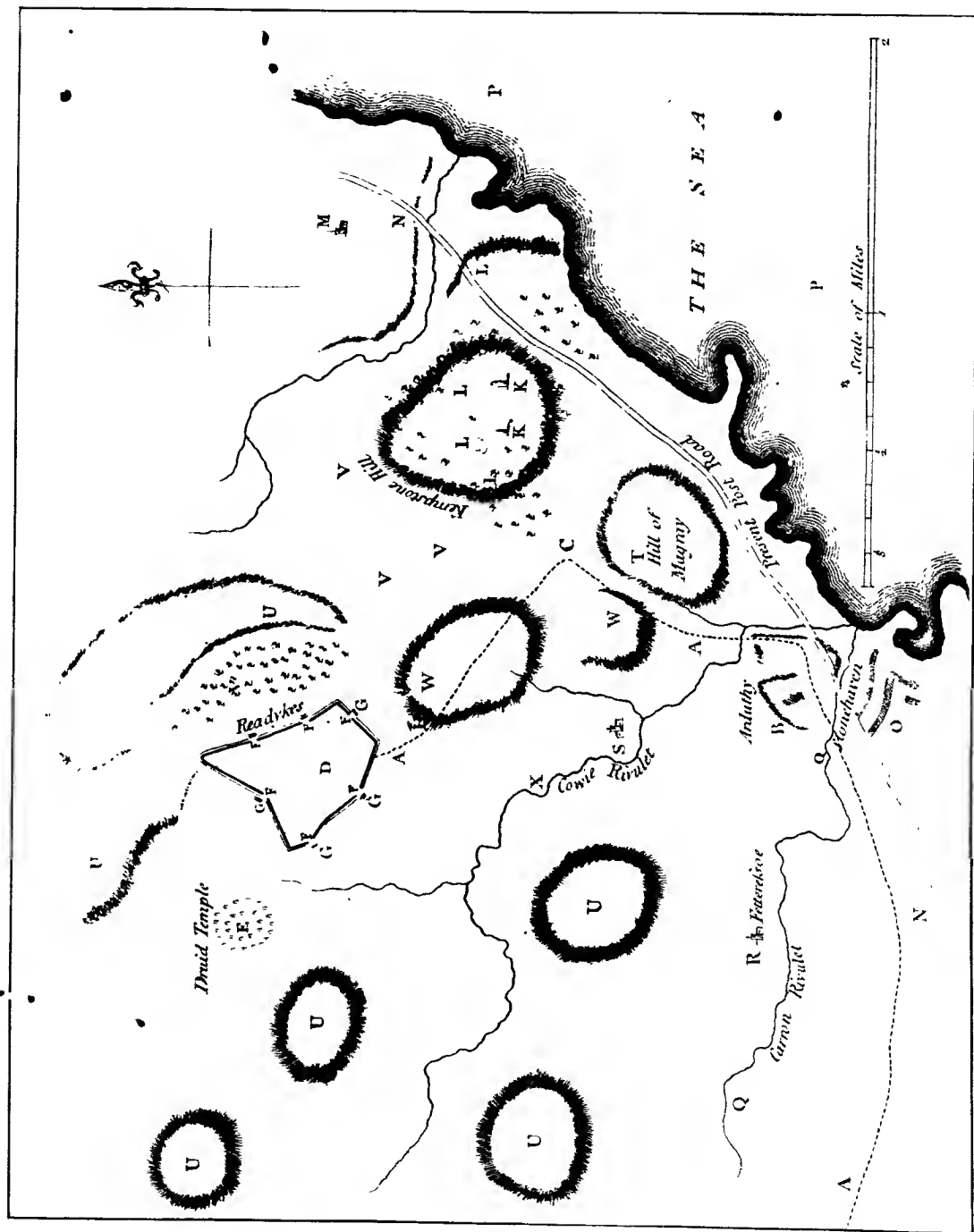


Fig. 2. Map of the Country round Raedlykes, from the *Bibliotheca Topographica Britannica*, No. xxxvi.
(For the lettering, see p. 322 *supra*.)

occupied two successive meetings in the winter of 1819 (Jan. 26 and Feb. 8),¹ forty-one years after Stuart's original examination of Raedykes. Barclay and Melvill were both dead, and Lord Buchan had long ceased to interest himself actively in the Society's proceedings.² The paper was thus a revival of an almost forgotten discussion. In the interval, however, the claim of Raedykes to a genuine classical ancestry had been fortified by its inclusion in General Roy's *Military Antiquities of the Romans in North Britain*, where a plan of it appears on plate L.

It is practically certain that Roy himself had never seen Raedykes. He seems not even to have known of its existence until his book was, as he thought, completely finished. There is no allusion to it in the text, and a scrutiny of the manuscript copy in the British Museum—which is more perfect than that in the library of the Society of Antiquaries of London—shows quite conclusively that it had no place in the original list of plates. I hope to set forth in detail elsewhere the evidence I have collected as to the circumstances attending the composition and the ultimate production of the *Military Antiquities*. Meanwhile it must suffice to say that the book was ready for the press in 1773, between which date and 1777 a few unimportant changes were introduced by the author. Thereafter the MS. lay untouched until it was posthumously published in 1793 at the expense of the London Society, one or two additional drawings having accumulated in the meantime. From the language used in their report to the Council of the Society by the Committee that had been appointed to supervise the issue, one might naturally enough infer that this Committee had restricted their energies to the task of securing diplomatic accuracy of reproduction, and had scrupulously refrained from any attempt to edit.³ As a matter of fact, however, a close examination reveals unmistakable indications of editorial handiwork.

The editorial change that is of most immediate interest to us here is the insertion of Raedykes in the Map of Roman Scotland,⁴ where it is accompanied by the description "*Cast. Agricolaë*." It would seem that after he had put the finishing touches to the text—that is, after 1777—Roy had for the first time heard of the camp, and had either simultaneously or later on been able to secure a plan. Of this plan two copies were made, one for each of the two MSS. of the book. They are water-colour drawings, corresponding exactly in size and style with the illustrations originally included. Possibly they are from Roy's own brush. If not,

¹ *Arch. Scot.*, iii., Appendix, p. 172.

² He resigned the Vice-Presidency in 1790 (*Arch. Scot.*, iii., Appendix, p. 1).

³ In the prefatory note that follows the second title-page the Committee say, quoting their own report, "that it had been judged proper to publish the work from the manuscript, without any commentary, or deviation from the style and orthography of the original."

⁴ Plate I. in the *Military Antiquities*.

they must have been executed under his personal supervision. In either case their presence in the collection is clear proof of an intention to revise the work once again, incorporating Raedykes. The action of the editors in reproducing the plan, and in inserting the camp on the Map, was thus fully justified. Nor did they go beyond their duty in adding the description "*Cast. Agricolaë*," for Roy's own opinion was plainly expressed in the headline which appears on each of the drawings: "Plan of Agricola's Camp called Rae Dykes near Ury about 3 Miles from Stone-Haven."

One cannot help wondering how Raedykes was brought to Roy's notice. It may very well be that the first information came to him from Melvill, who (it will be remembered) had seen the camp in 1777. The two were old acquaintances, and they must have met from time to time in London, where both were resident for a number of years before Roy's death in 1790. On such occasions the conversation must now and again have turned upon Roman antiquities, which formed the original bond of union between them, and it is difficult to believe that Raedykes was left unmentioned. Even if it were, however, so keen a topographer as Roy cannot possibly have missed the 'Albanicus' letters when they appeared in the *Bibliotheca* in 1786, especially as, in their more general aspect, they dealt with the very subject upon which the whole antiquarian world was just then expecting him to throw a flood of light.¹ We may, therefore, conclude that by 1786 at latest Roy was alive to the importance of Raedykes, and had made up his mind that it was Agricolan.

It is less easy to guess whence and when he procured his plan; but an analysis of the material may bring a solution of the mystery. The most convenient starting-point for our inquiry will be a quotation from Stuart, whose survey of 1778 has already been referred to. Writing in *Archæologia Scotica* in 1822, the Professor says:—

"A drawing of this Scottish camp, originally made by the author in 1778, was sent by him to the late General Melville, an eminent antiquary, and early associate of General Roy; and another furnished some years after by the Earl of Buchan was published by Nichols in the 36th number of his *Topographia Britannica*. There is also an engraving of it, though by no means accurate, in General Roy's *Military Antiquities*."²

From this passage it is clear that Stuart believed in the existence of three distinct plans of Raedykes—(1) his own drawing of 1778; (2) another sent to Nichols by Lord Buchan about 1785; and (3) the original of Roy's plate L., which cannot be later than 1790, the year of Roy's death. The adverse criticism here passed upon the accuracy of the last of these makes it certain that Roy's plan cannot have been copied from Stuart's

¹ Contemporary references show that it was well known that Roy's book was finished and might be published at any time.

² *Arch. Scot.*, ii. p. 301.

drawing. On the other hand, the absence of any such criticism of the *Bibliotheca* plan justifies the assumption that in all essentials there was complete correspondence between it and Stuart's. We may go further. Fig. 3 shows the third of the three plates used to illustrate the letters of 'Albanicus.' It will be observed that it is entitled "Camp of Rhé Dykes 1785," as if the year mentioned were the one in which it had been executed. But in a postscript to the second letter it is described more explicitly as a "*Plan of the Camp at Rae Dykes, on the Estate of Ury, in the Shire of Kincardine, as furnished by Robert Barclay of Ury, Esq.; from an actual Survey, to Lieutenant General Melvill, in 1778.*"¹ And the more explicit description is amply confirmed by what Melvill himself says in his contribution to Gough's Camden. After speaking of the visit he had paid to the spot in 1777, he proceeds:—

"Mr Barclay having been pleased very obligingly, in the following year, to transmit to General Melvill a very accurate drawing, from an actual survey, of the camp called Raedykes, it was inserted in the XXXVIth Number of the *Bibliotheca Topographica Britannica*."²

The sequence of events thus becomes plain. The "actual survey" of 1778 was Stuart's—we know from himself that it was in that year that it was carried out,—and the drawing which he made was subsequently forwarded to Melvill through their common friend Barclay. Stuart's plan and the *Bibliotheca* plan are, therefore, not merely in agreement: they are identical. One link only is wanting to complete the chain: we have still to discover what part Lord Buchan played in the transaction. This we are fortunately able to do. It is revealed in the following letter, written by the Earl to Nichols³:—

"To-morrow I shall send you the continuation of Albanicus's Remarks on the progress of the Roman arms in Scotland during the sixth campaign of Agricola, accompanied by a sketch of Richard of Cirencester's Itinerary, and a Topographical Map of the country adjacent to the remains of encampments at the north-eastern pass of the Grampian hills.⁴ Lieutenant-General Melville I find is possessed of a drawing of the camp at Rea-Dykes or Garnacahill,⁵ described in the account given of it by Albanicus in his second letter to the printer of the Gentleman's Magazine, and I have written the enclosed letter to that brave, humane, and learned General, the rival of the Marquis de Bouillé,⁶ who will probably permit you to use it for the purpose of rendering Albanicus's communication more satisfactory."

¹ *Bibl. Topograph. Brit.*, xxxvi. p. 15.

² Gough's ed. of Camden's *Britannia*, iii. (1790), p. 416*, footnote.

³ Printed in Nichols's *Illustrations of Literature*, vi. p. 508. It appears under the date "1784" but may not have been written till early in 1785.

⁴ These are respectively plates i. and ii. of *Bibl. Topograph. Brit.*, xxxvi.

⁵ A mere misprint for "Garniehill" or "Garrisonhill." So, too, "*Garniehill*," *supra*, p. 320.

⁶ That is, as a commander of troops in the West Indies.

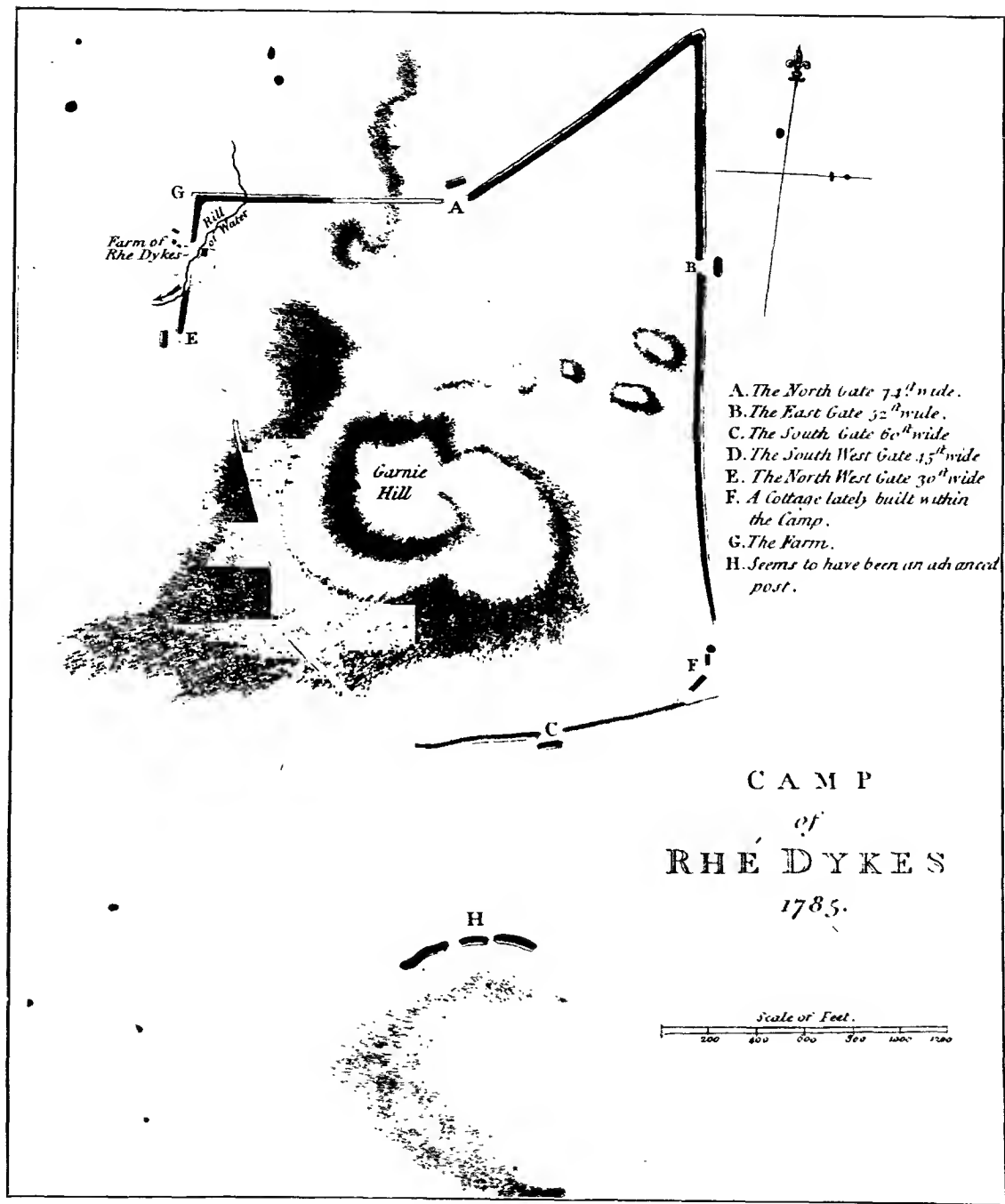


Fig. 3. Plan of Raedykes, from the *Bibliotheca Topographica Britannica*, No. xxxvi.

The identity of Stuart's drawing with the *Bibliotheca* plate being satisfactorily established, we may turn next to the engraving in Roy's *Military Antiquities* (plate L.). The most important part of it is shown here as fig. 4, the original scale being maintained. The first impression which it leaves is that of a country almost Alpine in its ruggedness, a picture very far removed indeed from the reality.¹ In fairness, however, it ought to be explained that the engraver alone is responsible for the precipitous character of the hills; no such abruptness of relief is suggested by the original water-colour sketch. This feature, therefore, may be disregarded. Concentrating attention upon the camp, one cannot but be struck by the different manner in which it is represented here and in the *Bibliotheca* plate (fig. 3). Thus, fig. 3 shows only a single gate in the east side, while fig. 4 shows two. Or compare, again, the position of the gates marked C and E in fig. 3 with that of the corresponding gates in fig. 4. Small wonder that Stuart, with whom the correctness of his own drawing would naturally be an article of faith, felt impelled to condemn Roy's engraving as "by no means accurate," especially in the light of the confirmation which he supposed that his own version received from the *Bibliotheca* plate, whose true origin he failed to recognise.

But the particular plate we have been discussing is not the only plan of the camp that appears in the *Bibliotheca*. The plate that immediately precedes it—illustrated here as fig. 2—is obviously a reproduction of the "Topographical Map" which the Earl of Buchan promised to send to Nichols along with the second 'Albanicus' letter.² And that will be found to contain a representation of Raedykes which differs so radically from the larger plan of fig. 3 as to exclude the possibility of its having been based upon Stuart's drawing. On the other hand, if it be looked at alongside of fig. 4, the resemblance to Roy's plan will be at once apparent. Indeed, when allowance is made for the difference in scale, the agreement between them is too remarkable to admit of any other explanation than that both have been derived from a common source. This conclusion brings the end of our quest appreciably nearer. If we can discover the origin of fig. 2, we shall know where Roy's plan ultimately came from.

Fig. 2, it will be remembered, is merely an improved edition of fig. 1, the improvement consisting mainly in the obvious effort made to delineate the outline of the camp more precisely. Further, we have seen that Barclay was responsible for fig. 1, and that, in forwarding it to

¹ The impression produced by the whole plate is naturally much stronger than that produced by the necessarily limited portion of it shown in fig. 4.

² See *supra*, p. 326.

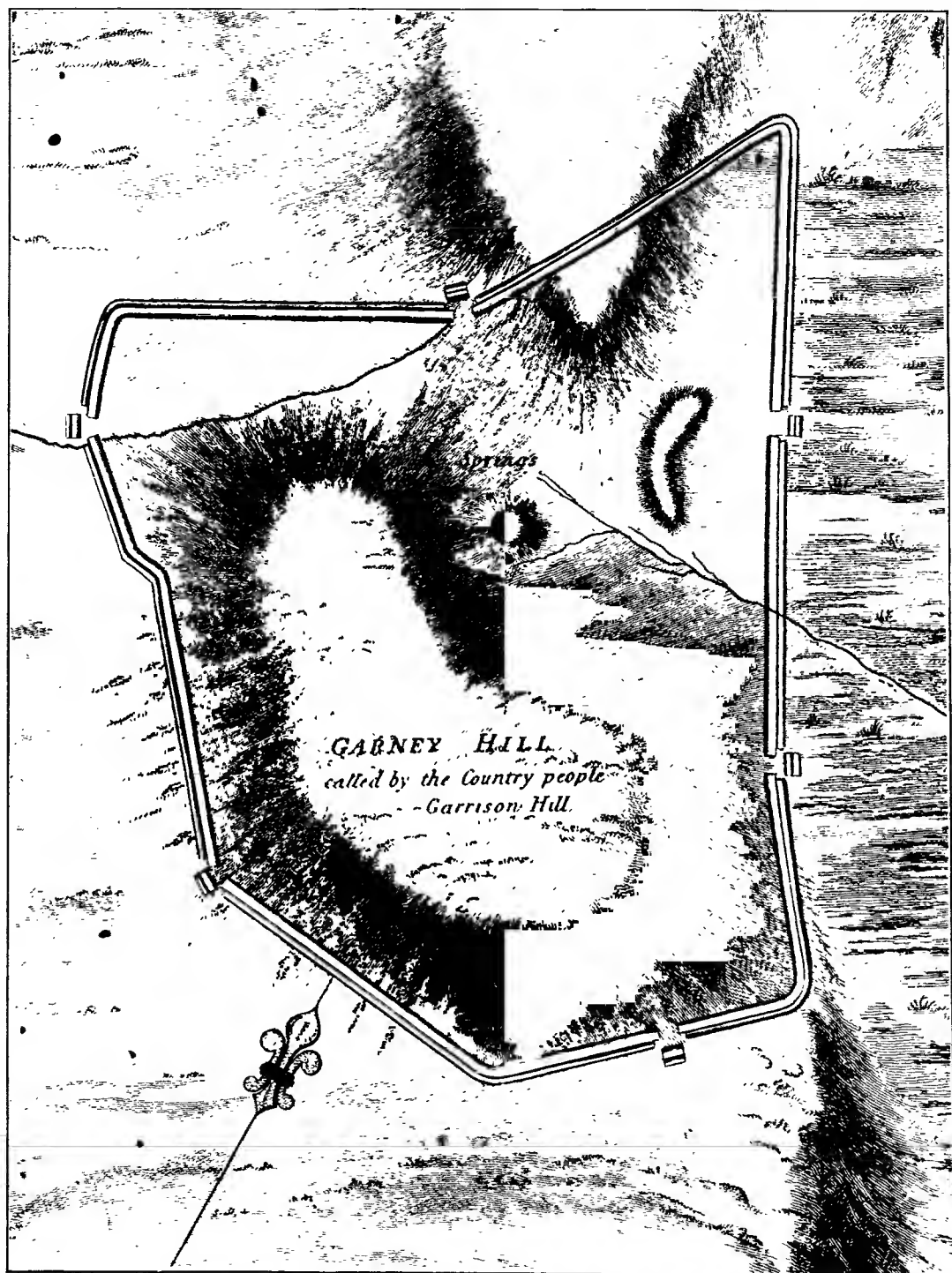


Fig. 4. Plan of Raedykes, from Roy's *Military Antiquities*.

0 500 1000 1500 ft.

Lord Buchan, apparently in response to a direct request, he took occasion to apologise for its imperfections, promising to let him have something better when the weather conditions improved. His *ipsissima verba* are:—

“I had the honour to acknowledge the receipt of your Lordship's letter. Since that time I have been at the camp of *Raedykes*, but could not take an exact measure of it, on account of the depth of the snow. As soon as the ground is clear, I will send to your Lordship an exact plan of it. I suppose, it contains about an hundred acres; but this is conjecture. At present, I transmit to your Lordship a rude sketch of the country near it, which, if it can be understood, will convey the ideas I have formed.”¹

This letter, as we have already learned, was written either in the end of December 1784 or in the beginning of January 1785.² The survey which it contemplates would therefore be made early in the latter year; for snow never lies long so near the sea. Its outcome would certainly be ready in ample time to be inserted in Lord Buchan's “Topographical Map” (fig. 2), possibly not before that was first sent to Nichols on 8th February, but at all events before it was engraved for the *Bibliotheca*, where it did not appear till 1786. Set alongside of this the fact that the small outline of *Raedykes* in the “Map” must be based upon an actual survey, since (as will be shown in the sequel) it reflects the reality a good deal more faithfully than does Stuart's drawing (fig. 3). What is the inference? Surely that in fig. 2, and consequently in Roy's plan, we have the result of a survey carried out by Mr Barclay's directions in the late winter or early spring of 1785. Stuart, as the author of an earlier plan, would naturally hear from Mr Barclay of this fresh survey and of its immediate purpose. In the circumstances it is not at all surprising that he should have been led astray by the arbitrary insertion of the date “1785” in plate iii. of the *Bibliotheca* (fig. 3), and should have mistaken his own drawing for the new plan.

It may be urged that Stuart ought to have been kept right by the postscript to the second ‘*Albanicus*’ letter, which gives a correct account of the provenance of the plate in question. Against this it must be borne in mind, firstly, that he was writing in 1822, thirty or forty years after the event; and, secondly, that he may never have seen the *Bibliotheca* itself at all, his knowledge being in that case derived from the summary in Gough's *Camden*, where the postscript is less prominent. George Chalmers apparently fell into the same mistake, for it seems clear that it is to fig. 3, and not to fig. 2, that he refers in one of his footnotes, the circumstantiality of which affords convincing proof of a fresh survey

¹ *Arch. Scot.*, vol. i. p. 565.

² See *supra*, p. 320, where it is indicated that December is the more probable.

having been made for the benefit of 'Albanicus,' and at the same time supplies us with a detail of considerable interest by revealing the name of the person who carried it out. The words of the footnote are:—

"See an Account and a Plan of this Roman camp, from an actual survey by George Brown, land-surveyor, in the *Bibl. Topograph. Brit.*, No. 36; Gough's *Camden*, v. iii. p. 416, pl. xxviii.; Roy's *Milit. Antiq.*, pl. 1. And see a plan of this remarkable ground in the *Transactions of the Antiq. Soc. of Scotland*, v. i. p. 565."¹

Our analysis of the material has thus led us to a quite unmistakable conclusion. The ultimate source of the engraving in the *Military Antiquities* was the plan which Brown prepared, on Mr Barclay's instructions, early in 1785. Incidentally, this fully explains its superior accuracy, of which we shall have an opportunity of judging in the sequel: Brown was a professional surveyor, while Stuart was an amateur. How Roy obtained access to it, will probably always remain uncertain. But it seems obvious that it must have been sent to him either by Mr Barclay or by Lord Buchan, possibly through the agency of Melvill, whom we know to have been in correspondence with both. It has already been pointed out that Roy cannot have missed the 'Albanicus' letters in the *Bibliotheca*. It may be conjectured that, in studying the illustrations, his trained eye was struck by the inconsistencies between the outline of the camp as it appears in plate ii.—our fig. 2—and the more elaborate plan that occupies plate iii.—our fig. 3—and that he was prompted to institute inquiries. Such a hypothesis makes everything plain.

Before we quit the older authorities, it may be useful to draw attention to the extraordinary differences between the various estimates that were formed regarding the superficial area of Raedykes. When every allowance has been made for the chance that some of the writers may be thinking of the Scots acre of 6084 square yards, and others of the English acre of 4840, the discrepancies remain sufficiently startling to serve as a warning against the too ready acceptance of eighteenth-century statements as to the size of now vanished entrenchments. Maitland's guess of "three-quarters of a mile square, or three miles in circumference,"² seems to suggest a total of about 370 acres. At the opposite extreme is the next description to be published—that of Francis Douglas, issued in 1782,—according to which the camp "is an oblong square of twenty-one acres, has four outlets, with redoubts before them, and many of

¹ *Caledonia*, vol. i. p. 177, footnote (c). The careful distinction drawn here between a plan of the camp and a plan of the ground makes it certain that it was plate iii. of *Bibliotheca* (i.e. fig. 3) which Chalmers believed to rest upon Brown's survey. Plate ii. (i.e. fig. 2) is virtually identical with the plan of the ground which he cites in the last sentence. See *supra*, p. 322.

² *History of Scotland*, vol. i. p. 202.

the trenches are still pretty deep.”¹ Twelve years later Douglas’s language was borrowed *verbatim* (without acknowledgment of any sort) in the notice of the parish of Fetteresso in Sir John Sinclair’s *Statistical Account*,² although the writer, who was the parish minister, might have satisfied himself of its inaccuracy by half an hour’s personal inspection or by five minutes’ talk with Mr Barclay. Barclay’s own estimate of the extent of Raedykes comes nearer the truth than that of any of the others. He puts it at “about a hundred acres.”³ The Earl of Buchan increases it to “about 120,”⁴ while Stuart cuts it down to “forty or fifty.”⁵ The real figure is ninety-three and a half.

The main facts as to the rediscovery of Raedykes having now been put on record, we are free to turn to the excavations of 1914. In connection with these it is a pleasure to bear witness to the ready courtesy with which permission to dig was granted me by Mr Alexander Milne, factor on the Urie estates, as well as by the two tenants who were immediately concerned, Mr James Burnett (Newbigging and Broomhill) and Mr Francis Gibson (South Raedykes). It should be added that I was specially fortunate in securing the services of Mr William Middleton, Stonehaven, as leader of our little working party. Such success as attended our operations was in large measure due to the keen personal interest which he took in the whole enterprise. Description of the results will be facilitated if attention be drawn at the outset to a somewhat unusual feature that emerged at an early stage in our examination of the defences.

A glance at Professor Stuart’s plan (fig. 3) will show that the line by which the boundaries of the enclosure are represented is not of a uniform thickness throughout. Speaking generally, one might say that it is broad towards the north and east, narrow towards the south and west. No such difference is apparent in Brown’s plan as reproduced in Roy’s *Military Antiquities* (fig. 4). Yet the variation which Stuart’s drawing displays corresponds more or less accurately to a real and important distinction. Digging revealed the fact that the engineers who constructed the camp had made use of two well-marked types of ditch and rampart, the choice of type for each particular section being obviously determined by the nature of the ground that happened to lie immediately in front.

Wherever the conditions were at all favourable to an attacking party, the ditch assumed the character which we are accustomed to associate with fortifications of Roman origin. That is, it was V-shaped, with a width of about 15 feet and a depth of about 7. Usually it was faced with

¹ *General Description of the East Coast of Scotland, etc.*, p. 260.

² Vol. xii. p. 596.

⁴ *Bibliotheca Top. Brit.*, xxxvi. p. 15.

³ *Arch. Scot.*, vol. i. p. 565.

⁵ *Arch. Scot.*, vol. ii. p. 300.

puddled clay on one side or on both. The cuttings which yielded no evidence of this precaution were, indeed, so few in number as to justify the supposition that its apparent absence was purely accidental, a consequence of natural decay. It seemed to have been applied with special care and elaboration at all points where the unevenness of the surface suggested the risk of a sudden rush of water after a heavy fall of rain. And that, no doubt, supplies the clue to its ultimate object. One instance was particularly striking. As it approaches the N.E. corner of the camp from the west, the ditch follows a route that could not but make it a natural drain for a fairly extensive area. In a section cut across it a few feet before the actual turn was reached, scarp and counter-scarp were found to be firmly plastered with a layer of puddled clay about 2 inches thick. This clay was hard—some of it so hard as to be almost like baked brick,—while much of it was of a peculiar red colour, quite unlike anything that the immediate neighbourhood would furnish. Mr Burnett, the tenant, was of opinion that it must have been brought from a bed nearly a mile away.

In the section of which we have been speaking the initial angle of descent of scarp and counter-scarp was maintained with approximate uniformity until the two met at the bottom and formed a V. Elsewhere the ditch, when cleared out, presented a phenomenon closely analogous to one noted at Bar Hill on the Antonine Wall.¹ About 9 inches above the lowest level, the two sides suddenly became perpendicular, the result being to leave a flat bottom, generally about a foot and a half wide, sometimes fully two feet. In one very exceptional case the depth of the perpendiculars was as much as 18 inches, while the width of the flat bottom was actually 4 feet. This, however, was where the ditch abutted on the edge of the roadway issuing from one of the gates, so that the conditions must be regarded as somewhat abnormal. Comparing Raedykes with Bar Hill, we may note that the various ditches at the latter (which was, of course, a permanent fort) had an average width at the top of rather more than 16 feet and an average depth of from $6\frac{1}{2}$ to $7\frac{1}{2}$; and that the perpendiculars at the bottom measured 18 inches, the flat space between them ranging from 2 feet to 8 inches in breadth. The general effect was as shown in fig. 5.

Thus much for the first type of ditch. The second type, which occurred wherever the nature of the ground was such as to render a sudden onset exceedingly unlikely, was totally different in character. It was only $8\frac{1}{2}$ feet wide, and its depth in the centre was seldom more than a foot and

¹ See *The Roman Forts on the Bar Hill*, p. 28 (*Proceedings*, vol. xl. p. 430), where an English analogy is cited. Cf. also the sections of the ditches at Newstead, many of which display the same feature (Curle, *A Roman Frontier Post*, p. 30).

a half. The shape, too, was distinctive. It bore no sort of resemblance to a V, but had merely been scooped out in a more or less perfunctory manner. In other words, it was not a "*fossa fastigata*." Still less could it be classified as a "*fossa punicata*," the one other variety which the *Liber de Munitionibus Castrorum* is disposed to recognise.¹ Similarly, its dimensions were only in partial conformity with the standard set up by Hyginus, who prescribes² a minimum breadth of 5 feet and a minimum depth of 3, even for a ditch which is dug "*loco securiori*," as this was. These facts must be noted, but it would be a mistake to regard them as constituting an insuperable objection to the view that Raedykes was of Roman origin. After all, the manual of Hyginus had no more authority than any other practical text-book; it could not fetter the discretion of individual commanders.

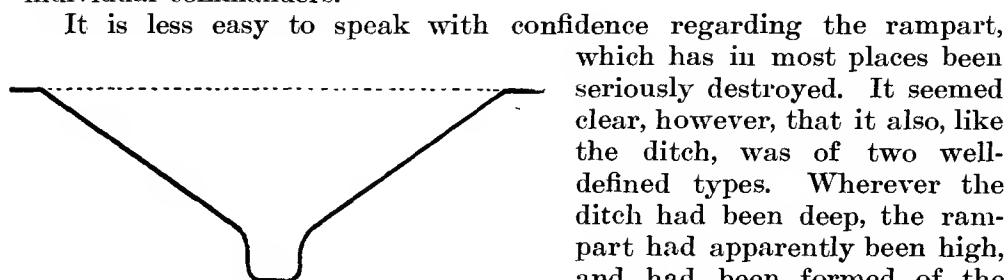


Fig. 5. Section, showing shape of ditch at Bar Hill.

It is less easy to speak with confidence regarding the rampart, which has in most places been seriously destroyed. It seemed clear, however, that it also, like the ditch, was of two well-defined types. Wherever the ditch had been deep, the rampart had apparently been high, and had been formed of the earth thrown up by the diggers. There was no substratum of stones or of clay. Instead, a black layer, immediately above the original surface, indicated decayed vegetation, and proved that the excavated material had simply been tossed on to the grass or heather as it grew. It is impossible to give any estimate of the original size of the mound. Where it is best preserved, its greatest height to-day is about $4\frac{1}{2}$ feet, while the black layer extends continuously backwards for a distance of 19 or 20 feet from the inner lip of the ditch. The figure just mentioned cannot, however, be assumed to represent the actual breadth of the base; for, as the mound crumbled, the black layer would inevitably tend to spread. It should be added that there appears to have been no berm, the outer face of the rampart rising in almost a direct line with the inner face of the ditch.

Turning to the second type, one may say that, wherever the ditch became narrow, the available evidence suggested that there had been a corresponding change in the character of the barrier behind it. To begin with, where it is best preserved it is now no more than $3\frac{1}{2}$ or 4 feet high, and this may be a somewhat more reliable index to the original size than

¹ *Op. cit.*, c. 49.

² *Ibid.*

was the $4\frac{1}{2}$ feet of the earthen mound, for the material used had consisted of large, loose boulders, evidently gathered from the hillside, so that the natural process of disintegration would be relatively less rapid. Again, the apparent breadth at the base was only about $8\frac{1}{2}$ feet, as compared with 19 or 20; and here too it is probably unnecessary to make much allowance for "spread." Even so, however, the second type of rampart, like the second type of ditch, must have fallen distinctly short of the requirements formulated by Hyginus, who lays down a minimum breadth of 8 feet and a minimum height of 6 as suitable for a *vallum*.¹ That, however, was "*loco suspectiori*," and it is, therefore, hardly a fair test.

We pass next to a more particular description of the camp as a whole. The irregularity of its outline is so pronounced that there is no geometrical term which could convey an accurate idea of its general configuration. That can only be gained by referring directly to the plan (fig. 6).² For our immediate purpose it will be convenient to treat four of the angles (P, Q, R, and S) as principal angles, and therefore to regard the enclosure itself as a quadrilateral. Nor is it only considerations of convenience that suggest such a course as desirable. If attention be paid to the position of the six gateways, as indicated on the plan by the first six letters of the alphabet, it will be observed that they fall naturally into three groups, each of which may not unfairly be called a pair of opposites—*A* and *E*, *B* and *D*, *C* and *F*. Once this fact has been realised, it needs no great effort of imagination to see in Raedykes a Roman camp of ordinary form, with its sides deflected from their normal lines as the result of an endeavour to accommodate themselves to the sinuosities of the ground. This is a point to which we shall have occasion to return.

The north-eastern angle of the camp projects like a huge salient into the moor. On both sides of the salient the ditch has suffered comparatively little from the neglect of centuries, while considerable stretches of the rampart remain in fairly good preservation. Although the actual corner (P) has been partially obliterated by a farm-road running north and south across the defences, enough of it is left to show that it had originally been rounded in the usual Roman manner. The general conditions, in short, seemed to indicate this as a suitable spot for beginning our excavations, and it therefore becomes a natural starting-point for a statement of their results.

The ground along which the eastern side of the defences (P Q) runs slopes gently from north to south. Immediately in front is a stretch of flat, open moorland, towards the southern end of which there rises a

¹ *Lib. de Mun. Castr.*, c. 50.

² In the preparation of the plan I have received very valuable assistance from Mr J. Mathieson of the Ordnance Survey Department.

group of low hills, having between them and the camp what was in earlier times apparently a bog. The total length of the line from P to Q is about 2626 feet, inclusive of the gaps for entrances at A and B.¹ For about three-quarters of that distance it is virtually straight. Immediately beyond gate B, however, it swings slightly to the east, and continues to follow the altered direction until Q is reached. From P to gate B it forms the boundary between the farm and the uncultivated moor. Here, accordingly, the ditch remains distinctly visible, while (as already indicated) there are still extensive traces of the rampart, especially between P and gate A. With the change of direction comes another change: not only is the rampart completely levelled, but even the course of the ditch can no longer be readily determined. The explanation lies partly in the fact that the ground here, though it has now reverted to moorland, has at one time been under cultivation.² But there is also a further reason. All the way from P to gate B the ditch has been of the deeper or more formidable type. It has continued to be so for some 60 yards beyond gate B towards Q. Thereafter it has rapidly grown shallower, soon merging into the second or slighter type described above. There is no evidence to show whether the rampart underwent a like transformation, but it is natural to suppose that it did.

The distance from P to Q, as shown on the 25-inch Ordnance map of 1903, approximates very closely to the measurement given above. Exact comparison between the two is, however, impossible, partly because of the difficulty of fixing an identical starting-point at P, and partly because the position of Q on the Ordnance map is avowedly conjectural. Besides, the officers of the Survey have taken no notice of the gates, and their reason for ignoring them is plain. Although gaps in ditch and rampart are apparent both at A and at B,³ there is nothing on the

¹ It may be interesting to compare the details of this measurement with the surveys of Brown (1785) and Stuart (1778), as recorded in the plates of the *Military Antiquities* and of the *Bibliotheca* respectively. Owing to the smallness of the scale on which they are reproduced, the margin of possible error in connection with these, particularly the latter, is large; and the danger is, of course, specially great where the distances concerned are relatively minute, as is the case with the spaces for the gates. It has further to be remembered that Stuart failed to notice gate B at all. The following table brings out the facts, the distances at the extremities being reckoned from the middle of the ditch:—

	Macdonald.	Brown.	Stuart.
From P to A =	917'	840'	930'
Gap at A =	64'	110'	52'
From A to B =	938'	910'	} 1480'
Gap at B =	41'	90'	
From B to Q =	666'	660'	
	<hr/> 2626'	<hr/> 2610'	<hr/> 2462'

² Probably during the first fifty or sixty years of the nineteenth century.

³ That at B is much more indefinite, owing to the greater extent of damage done. The distances from P and Q and from one another are given in footnote 1, *supra*.

surface to make their purpose clear. Since 1785, when the plan reproduced in the *Military Antiquities* was made, the *tutuli* or covering ditches have entirely vanished. They were easily recovered with the assistance of the spade, and were examined with some care. A particular description of them seems desirable.

The exact width of the gap in the rampart at *A* cannot now be determined. But the width of the gap in the ditch was 64 feet. The interval was covered with puddled clay, which sloped gently down into the ditch on either hand. Opposite to it, and at a distance of 38 feet from the outer edge of the line of the ditch, was the inner edge of the *tutulus*. This latter was 61 feet long, 11 feet broad, and 5 feet deep. Both sides had had a covering of puddled clay. They sloped inwards until within about 9 inches of the bottom, when they suddenly became perpendicular, forming a trench about a foot and a half wide. The analogy with the ditch of the main camp does not need to be emphasised, but it should be recorded that, about a foot and a half from the bottom, a line of decayed vegetable matter of considerable thickness was noted, indicating perhaps the depth to which the *tutulus* had been open in 1785, subsequent to which date it was probably filled up of set purpose when the ground was put under cultivation. The *tutulus* at gate *B* (which was almost directly opposite the farmhouse of Broomhill) proved to be similar in shape and construction, while its distance in front was exactly the same, 38 feet. It was 12½ feet broad and 4 feet 8 inches deep, with clay upon the sides; but it was no more than 39 feet long, a figure which perhaps justifies us in estimating the gap in the ditch at 41 feet. From the fact that no layer of black mould was observable, we may conclude that this *tutulus* was filled up very early. It is obvious that it was barely visible in the eighteenth century; for, although Maitland and Brown detected it, Douglas and Stuart missed it completely.¹ As they also missed the gate itself, the inference is that, at this point, rampart and ditch were then in much the same condition as that in which we find them to-day, the ruin being so considerable that the gap for entrance is no longer properly distinguishable. The corner at *Q* was cleared out with the spade, and proved to be rounded as *P* had been.

The stretch from *Q* to *R* represents the shortest of the four sides. It is also the side which is most difficult to trace. As a rule, it is accessible, from the outside, only after climbing a long slope, with the result that the slighter type of defence has been deemed adequate throughout. The plough, therefore, which at one period or another has been busy over all save a fraction of its length, has found the task

¹ For Stuart and Brown see figs. 3 and 4 above; and for Maitland and Douglas see the quotations on pp. 318 and 331.

of obliteration fairly easy. Except in two short sections, nothing whatever is visible upon the surface. This lack of obvious evidence finds its reflection in the differences between the surveys. According to Brown the length of Q R is only 960 feet, while according to Stuart it is as much as 1380. As the two are in general agreement regarding the position of Q, it is plain that the disturbing factor must be the uncertain position of R. The measurements taken in 1914, based as they were upon investigation by the spade, go to prove that Stuart was approximately right: they give a total distance of some 1300 feet between Q and R. At the same time they furnish a convincing explanation of the error into which Brown fell. It will, therefore, be convenient to make the record somewhat detailed.

The point Q lies 110 feet east of a well-marked angle in the wall forming the eastern boundary of the farm-road leading to Broomhill. In its progress towards R the line of the defences is at first entirely obliterated. By and by, however, the track of the ditch becomes quite apparent, and behind it runs a series of boulders representing the remains of the rampart. These traces are first noticeable about 88 feet from the spot where the wall is intersected, this spot being in its turn about 170 feet south of the angle mentioned above. So soon as the wall is crossed the clue disappears entirely. The line is lost beneath the farm-road, and it fails to emerge in the cultivated land beyond. Digging, however, showed that it continued to run almost straight on. It was found that, after traversing diagonally the corner of the first field (O.S., 1903, No. 2301), the ditch presently enters a second (O.S., 1903, No. 2302), the boundary between the two being crossed 65 feet out from the western margin of the farm-road. A short stretch of 24 feet then led to the gap at gate C. This gap turned out to be 58 feet wide. About 20 feet in front of it lay a *tutulus*, 56 feet long, but otherwise presenting exactly the same characteristics as were shown by the main ditch throughout the whole length of the side Q R. That is, it was about $8\frac{1}{2}$ feet wide and about a foot and a half deep in the centre. It is clear that it can never have been intended to be a serious obstacle, and that an attack from this quarter was regarded as in the last degree improbable.

Beyond gate C the course already set was pursued with little or no deviation. For some 250 or 260 feet there is nothing to be seen. Then the rampart suddenly reappears, shortly after the line has reached a rough corner of the field where tilth and moorland merge one into the other without any wall to divide them. It remains in good condition for about 190 feet, only stopping short a foot or two on the hither side of a third field (O.S., 1903, No. 2304), beyond the boundary wall of which the surface once more resumes its normal aspect. The boulders used to form

the barrier are here exceptionally large, some of them being from $2\frac{1}{2}$ to 3 feet long, with their other dimensions in proportion. No doubt the difficulty of moving such unwieldy blocks accounts for their survival *in situ*, their fate forming in this respect a curious contrast to the obliteration of their companion ditch, the presence of which in front had to be verified by digging. We must suppose that elsewhere along Q R the rampart has been deliberately destroyed, by organised effort, in the interests of cultivation. At the farther extremity of the section we have been describing, a few of the displaced stones have been thrown into the moor behind, giving the spot something of the appearance of a corner.

This last feature is without doubt responsible for the most serious blemish that disfigures the general accuracy of the plan reproduced in Roy's *Military Antiquities* (fig. 4). A comparison of measurements makes it clear that Brown took it for granted that the line swung to the right here and proceeded straight through the moor to gate D. He was obviously misled by the displaced stones that have just been referred to, perhaps because in carrying out his survey he approached the spot from the north-east, precisely as we have done. Had he come to gate D first, a careful search in its neighbourhood would probably have given him a hint that would have enabled him to avoid the mistake into which he actually fell. Digging amply confirmed Stuart's diagnosis. Instead of swinging to the right at the point in question, the line ran on straight ahead, passing through the corner of the third field (O.S., 1903, No. 2304), crossing a fourth (O.S., 1903, No. 2308), and finally entering a fifth—the steeply sloping field immediately above the farmhouse of Garrisonhill (O.S., 1903, No. 2307)—about 109 feet from its eastern edge. Within the northern half of the last-named field the point R undoubtedly lies. The state of the crops precluded any endeavour to fix its exact position by excavation. On the other hand, it was easy to determine it approximately, by conjecture, as the point of intersection of two adjacent sides whose general direction was known. The distance from the nearest side of the gap at gate C must have been about 832 feet, giving a total length of about 1300 feet for the side Q R.¹

If Q R was the shortest and most regular of the four sides, R S, while not the longest, was certainly the most irregular. The ground which it

¹ The following comparison is on the lines of that made in footnote 1 on p. 336:—

	Macdonald.	Brown.	Stuart.
From Q to C =	410'	370'	760'
Gap at C =	58'	90'	60'
From C to R =	832'	500'	560'
	1300'	960'	1380'

Note that, while Stuart's total is approximately right (allowance being made for the difficulties mentioned in the former footnote), he blunders seriously regarding the position of the gate.

traverses is at once undulating and high, with a steep fall towards the outside. Hence the otherwise unintelligible turns which the line displays as laid out upon the plan, and hence also the use of the less formidable type of defence for some six-sevenths of the entire distance. From the angle R (which we may safely assume to have been rounded) as far as gate *D* the course followed appears to have been straight. The shallow ditch was recovered by digging at three intervening points:—firstly, where it returns to field No. 2308, about 340 feet west of the point at which it had entered it; secondly, where it passes from field No. 2308 into field No. 2309, about 60 feet from the northern extremity of the wall that separates the two; and thirdly, where it once more reaches the open moor, about 118 feet west of the extremity just spoken of. Even on the moor the track is at first extremely hard to pick up. For 145 feet the surface indications are of the faintest. Still, a close scrutiny will detect them,¹ and it was probably their discovery that enabled Stuart to steer clear of Brown's mistake, and that has made it possible for the officers of the Ordnance Survey to reconstruct the outline of this portion of the camp with such a near approach to accuracy.

At the end of this almost obliterated stretch of 145 feet comes the gap at gate *D*. The break in the ditch was 45 feet long.² At a distance of some 30 feet in front of it was a *tutulus*, which resembled in general character the corresponding defence at gate *C*. That is, it was of the same breadth and depth as the shallow type of ditch, clearly because the nature of the ground was here of itself sufficient to provide immunity against serious attack. As a result, it has now disappeared entirely. It was, however, recovered by excavation, when it proved to be 33 feet long, or 12 feet less than the opening which it was supposed to cover.³ For rather more than 1000 feet beyond the gap no difficulty whatever presents itself. After an initial inclination towards the right, ditch and rampart, in spite of the fact that they have been of the slighter type, remain conspicuous for nearly 300 yards as they run almost in a straight line across the shoulder of the hill. Boulders peeping out from the overgrowth of whin and heather serve to show how compact has been the structure of the *vallum*. When the steep slope, now occupied by the cultivated fields that lie around the deserted homestead of Mid-Raedykes, is well within sight, there is a sudden swing to the left, no very obvious explanation of which can be suggested. Just where the descent begins to become pronounced, there are indications of an attempt to remove the rampart: the

¹ In 1914 they were almost wholly obscured by whins. On revisiting the camp in 1916, I found that the whins had been burned in the interval, and the task of following the line was consequently somewhat easier.

² This is Stuart's figure. Possibly it may have been rather less, seeing that the covering *tutulus* was only 33 feet long.

³ But see preceding footnote.

boulders are scattered about in a confused way, as if an unsuccessful endeavour had been made to clear the ground for agricultural purposes. Fortunately, the ditch maintains the clue intact. Recovering something like its former direction as it passes through the corner of the first enclosure (O.S., 1903, No. 2284), it enters the second (O.S., 1903, No. 2283) about 40 feet below the upper end of the dividing line between them.

The section that immediately follows turned out to be more difficult to trace than any other, and in the end the hope of discovering gate *E* had to be reluctantly abandoned. This is scarcely matter for surprise, since it is plain from fig. 3 that even in 1778 the defences at this point had almost completely vanished. Digging in 1914 showed that Stuart's conception of their course was fairly sound—a good deal sounder than Brown's, although his measurements were much less accurate. Fig. 4 represents them by a broad straight line running direct to gate *E* from the point that was reached at the close of the preceding paragraph. Fig. 3, on the other hand, ventures only on faint and somewhat sinuous markings. The spade revealed ample justification both for the faintness and for the sinuosity. All the way through field No. 2283 the ditch continues to be of the slighter type, so that it was peculiarly ill fitted to resist the erosive forces that would naturally attack it as it traversed the face of the steep slope and dropped gradually down to the level. Consequently the traces it has left are very indefinite. It was, however, possible to make out that it had crossed the field diagonally, with at least one distinct deviation from the straight, and had finally passed out of it immediately above the north-west corner. By this time it has reached the level, where further investigation is barred by the interposition of the farm-road.

Even had it seemed prudent to tamper with the roadway, the chances of a successful search beneath it would have been almost infinitesimal; the slighter type of ditch could hardly have survived the extensive 'making up' to which the ground has been subjected. Here, therefore, recourse must be had to conjecture. A firm basis for it will be found by crossing the road to a point directly opposite the door of the deserted farmhouse. Nothing is visible on the surface of the field beyond. But trenching showed that it was just here that the ditch emerged, and showed, too, that when it did emerge it was of the deeper and more formidable type. There is thus no doubt that the gap at gate *E* lies under the farm-road, and that (as fig. 3 seems to indicate) it was at this gap that the character of the defences changed. The reason for the change is self-evident: the terrain that lies in front is flat and well adapted for the massing of an attack.

Leaving the gate for the moment, we may follow the ditch as far as the corner S. No surface-signs were available for guidance; but by the

aid of cuttings it was traced through the field in front of the farmhouse (O.S., 1903, No. 2279), about 80 feet from the north-east angle of which it passes into the next field (O.S., 1903, No. 2258). The point S lies about 158 feet beyond the dividing wall, or about 360 feet from the spot where the ditch reappears at the edge of the road. Curiously enough, if we turn to fig. 4 we shall see that 360 feet is as nearly as possible the distance by which S is there represented as being separated from the gap at gate *E*.¹ We thus reach by another route the conclusion at which we had already arrived as to the site of gate *E* being buried beneath the farm-road. In all probability the *tutulus* is similarly concealed. At all events, search for it elsewhere was fruitless, and there is abundant room in the suggested hiding-place. It must be borne in mind that the *tutulus* at *E*, while it may have been deep, was exceptionally short, the gateway there being very narrow, much narrower than any of the others. This we know from Stuart, who gives it at 30 feet, and whose record, being a verbal one,² may be all the more confidently relied upon because of its comparative accuracy in regard to other gates.

The condition of the crops unfortunately prevented the actual location of the corner at S by digging. But, in the light of the two eighteenth-century surveys, its position can safely be determined by producing the two adjacent sides till they meet. Equally, the general trustworthiness of Brown's plan justifies us in assuming that the angle was rounded, just as P, Q, and presumably also R, had been. It was apparently rather larger than a right angle. For some distance after quitting it the line of the ditch has been completely obliterated. Presumably, however, it continued to be of the deeper or more formidable type. That is what the nature of the ground requires, and what Stuart's plan suggests. Moreover, the presumption becomes a certainty when the surface-indications appear again, as they do about 360 feet beyond S, as the line begins to ascend an uncultivated slope. Some 160 feet farther on, the terrain in front once more becomes difficult for an assaulting party, with the result that the character of the ditch promptly changes, continuing shallow for a stretch of some 550 feet—that is, until the gap at gate *F*, which stands on the brow of the hill, has been reached. The alteration is evident enough to the eye. But to make assurance doubly sure, it was verified by excavation.

Rampart and ditch have been a good deal disturbed in the immediate

¹ Stuart makes it about 600 feet, whereas at the outside it can hardly have been more than 380 feet or 400 feet. He is thus nearly as far astray here as he was at gate *C*. In view of the doubt as to the position of gate *E*, it does not seem worth while giving a comparative table of measurements for the side RS. The main differences will be apparent from the text.

² See the notes at the side of the plan reproduced as fig. 3. This explains why, in the comparative tables, Stuart's reckoning for the gates is always so much more accurate than Brown's, whose real estimate cannot fairly be judged from such a small-scale plan as fig. 4.

neighbourhood of gate *F*. It was, therefore, impossible to ascertain the precise width of the gap. Stuart, whose information on the point has some appearance of precision, makes it 74 feet. On the other hand, the now filled-up *tutulus*, which lay about 28 feet in front, was cleared out and shown to have been no more than 56 feet long. With a breadth of 10 feet, it had a depth of $5\frac{1}{2}$, while the sides sloped to within 9 inches of the bottom when they became perpendicular and so reached the lowest level a foot and a half apart. These dimensions show that the defences are entering a fresh danger zone. When ditch and rampart begin on the farther side of gate *F*, they are once again of the more formidable type, and this persists without a break as far as the corner *P*. The defences had need to be strong here, for they actually faced upwards towards a gentle incline. To-day they serve as a boundary between field and field, and consequently they are fairly well preserved for virtually the whole of the 1071 feet included in this section. The rampart is seldom less than 3 feet high on the inner side, and it rises gradually until it reaches a culminating point at *P*.¹ We are back now at the spot from which we started, and have next to consider what historical deductions, if any, we shall be justified in drawing.

Wherever the ground was opened, the earth was turned over very carefully, in the hope that it might yield some coin or some fragment of pottery which would serve as a clue to the history of the camp. The result was disappointing. The only object found was a shapeless mass of iron, which was recovered from the bottom of the ditch in a section cut across it a little distance to the eastward of gate *F*. The subsequent application of preservative treatment brought to light certain features which suggested that this mass may once have formed part of the hub of a wheel. And it is curious that wheels already figure prominently in the very meagre list of 'finds' that have been recorded from the area of Raedykes. Professor Stuart, for instance, writing in 1822, says that "a few years since" there had been taken out of the ditch "a small hoop or ring of iron, of the rudest workmanship, and much corroded, being about four inches in diameter, and very thick, which could be imagined useful for no other purpose than to contain the axle of one of their war chariots."² It is still to be seen in the Museum of King's

¹ As the data for the side *SP* are complete, I give a comparative table of measurements, corresponding to those already given for *PQ* and *QR*:—

	Macdonald.	Brown.	Stuart.
From <i>S</i> to <i>F</i> =	1070'	1040'	1060'
Gap at <i>F</i> =	58' (?)	80'	74'
From <i>F</i> to <i>P</i> =	1071'	1080'	1200'
	2199'	2200'	2334'

² *Arch. Scot.*, ii. p. 301.

College, Aberdeen.¹ Again, some time between 1824 and 1845, when the *New Statistical Account* was published, a complete wheel was dug up within the enclosure and transferred to Fetteresso Castle.² A special case was constructed to contain it, but no precautions were taken against decay and corrosion. To-day its remains are represented by three portions of the iron tyre, sadly rusted but still about an inch and a half broad. To judge by the dimensions of the case, the original diameter had been fully 3 feet.

It is by no means impossible that the three wheels, whose existence is thus indicated, may have belonged to the Roman period; wheels of an elaborate and highly finished type have been discovered on more than one Roman site in Scotland.³ But even the acceptance of such a view would not carry us very far, since it is always open to us to attribute them to the Celts. Nor do we get more substantial help from the vague statements that have come down to us as to the finding of other objects at Raedykes. The "urns" of which Francis Douglas spoke⁴ were almost certainly native. And the rest of the evidence he brings forward is equally open to question. When he speaks of "Roman *hasta*" and "a Roman spear,"⁵ he is using the adjective after the loose and unscientific manner which was customary in his own day, when antiquities of the bronze age were almost universally supposed to be Roman. Indeed, the case is unwittingly given away by Professor Stuart, who, referring doubtless to the very objects that Douglas had in view, mentions "heads of spears of mixed brass, as almost all those in Scotland ascribed to the Romans are."⁶ The more circumstantial report of Lord Buchan amounts to little more, although we know, as a matter of fact, that the two last among the articles he enumerates were of iron. He says:—

"Several Roman weapons have been found in this camp, particularly a *hasta* and helmet, of which the former is in the lawyers' library at Edinburgh; and lately a fragment of another *hasta* and a *malleolus* have been dug up."⁷

As there are no associated objects which throw a clear light upon the origin of Raedykes, we have perforce to fall back upon the testimony of

¹ *Proceedings*, xxii. (1888), p. 358, where the diameter is given as 8 inches. Doubtless this refers to the outer diameter, and Stuart's measurement to the inner.

² *N.S.A.*, vol. xi. *Kincardineshire*, p. 250.

³ *Proceedings*, xl. (1905-6), pp. 494 ff., where the possibility of a Celtic origin is discussed. Also Curle, *A Roman Frontier Post*, pp. 292 ff.

⁴ See the passage quoted *supra*, p. 319.

⁵ *General Description, etc.*, p. 261.

⁶ *Arch. Scot.*, ii. p. 301.

⁷ Nichols's *Bibliotheca Topographica Britannica*, No. xxxvi. p. 13. The *malleolus* and the fragment of the *hasta*, which were of iron, were presented to the Society of Antiquaries of Scotland (*Arch. Scot.*, iii., Appendix ii. p. 38). But they seem to have long since perished.

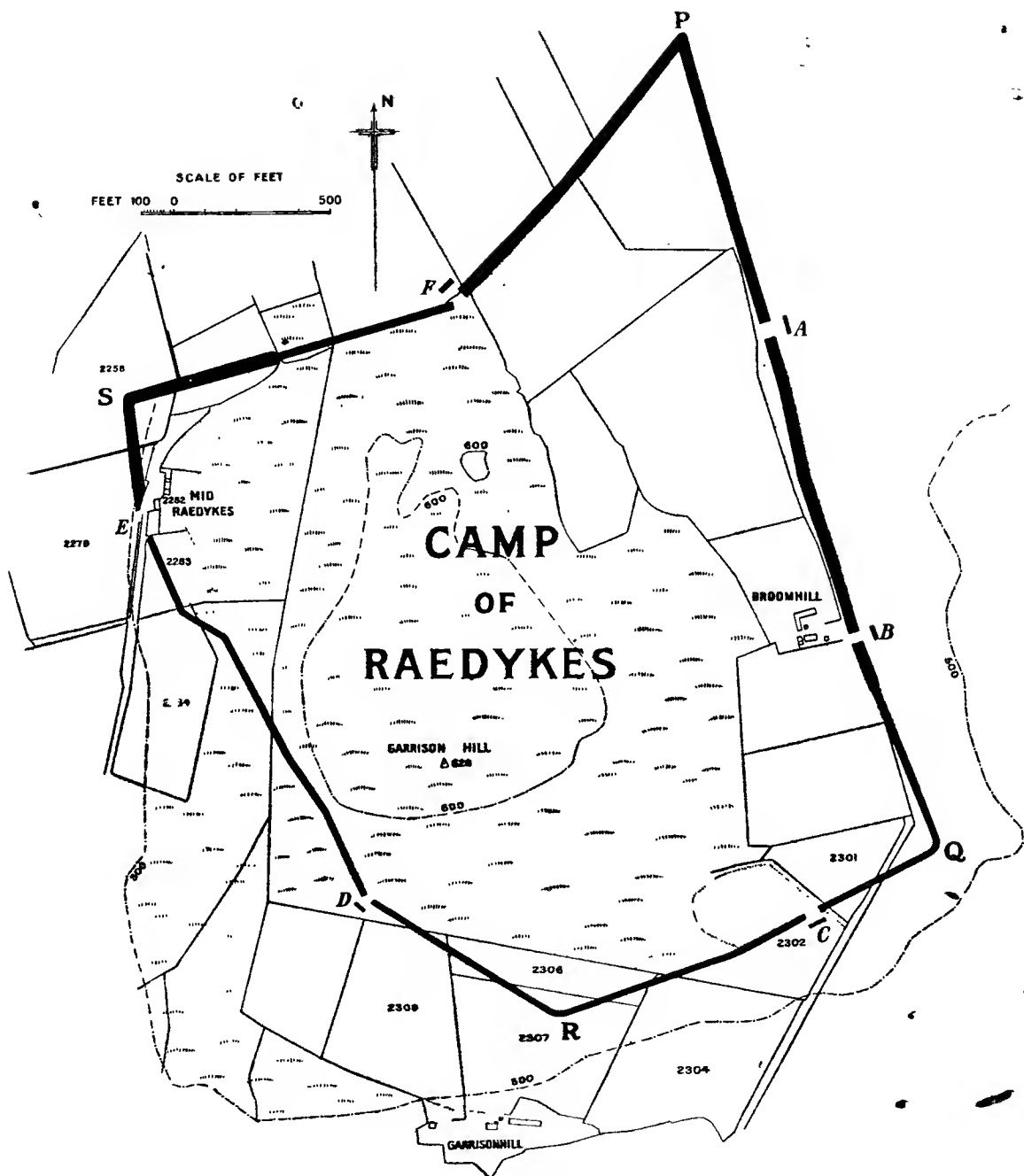


Fig. 6. Plan of Raedykes, based upon the excavations of 1914.

the entrenchments themselves. And here the eye is at once caught by a feature that is highly suggestive of Roman methods. Scotland offers no example of a camp of demonstrably native construction which has its entrances protected by traverses. In this case, however, each of the six gates has in front of it a *tutulus* such as the Roman military manuals prescribe, and such as are found in indubitably Roman forts like the Antonine fort at Bar Hill.¹ It may be argued that there was nothing to prevent the Caledonians from adopting devices which they saw in use among the invaders: *fas est et ab hoste doceri*. The possibility must be allowed, but the likelihood can hardly be admitted. Even the little excavation that has taken place has revealed facts that are inconsistent with a theory of imitation. The workmanship is too thorough. The shape of the deeper type of ditch, the care bestowed upon its formation, and in particular the elaborate strengthening of its sides with wrought clay, all bear witness to the activity of experienced military engineers. Raedykes was no amateur improvisation. But for its marked irregularity of outline, few would have had much hesitation in accepting it as Roman. It therefore becomes important to inquire what weight should be attached to the objection just indicated.

Attention has already been drawn to the fact that the six gates can be regarded as constituting three pairs of opposites, and to the consequent possibility of seeing in Raedykes a Roman camp of ordinary form, the sides of which have been deflected from the normal as the result of an effort to accommodate themselves to the sinuosities of the ground. The suggestion will hardly appear extravagant to those who are familiar with the fruit of recent investigations, as revealed in the reports of the Limeskommission or in Professor Ritterling's masterly account of the early Roman camp at Hofheim in the Taunus. These prove clearly that current notions as to the rigidity of the principles of 'castrametation' are only partially founded on fact.² The rules were more elastic than antiquaries have been disposed to allow. It is, of course, beyond question that the typical Roman fort or camp was approximately rectangular with rounded corners, and that the great majority of known examples conform more or less strictly to the type. But it is equally beyond question that, when in the field, commanding officers felt themselves at liberty to discard the precepts of the text-book, if particular circumstances seemed to them to render drastic modification desirable. This is especially true of the days of the Republic and of the early Empire. And of all varieties of modifying circumstances those connected with the character of the terrain were naturally the most

¹ *Proceedings*, xl. (1905-6), p. 432.

² See Ritterling, *Das frühromische Lager bei Hofheim im Taunus*, p. 4.

compelling. Two or three concrete illustrations should suffice to show that the irregular outline of Raedykes need not prevent us from recognising it as Roman.

In 1898 there was discovered at Heldenbergen in the Wetterau, some little distance north-east of Frankfort-on-the-Main, the ditch of a large Roman camp of first-century date, which had stood on a bluff above a knee-like bend of the river Nidder.¹ No exact comparison with Raedykes

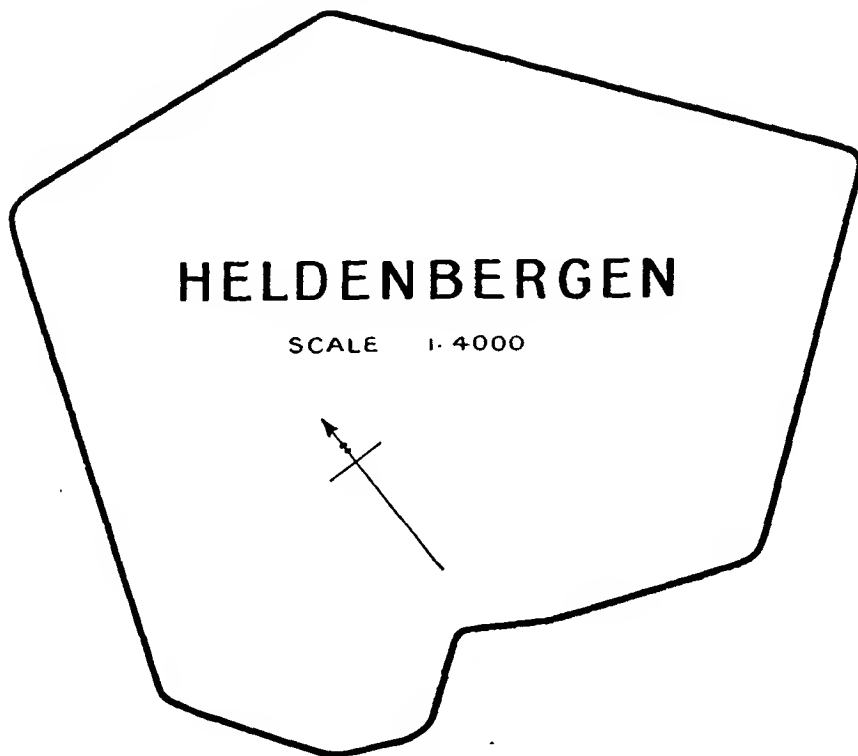


Fig. 7.

is possible. The outline had to be determined by the aid of sections cut at intervals, all surface traces having vanished completely, and the excavators were not fortunate enough to ascertain the whereabouts of any of the entrances. But the plan, so far as it was recoverable, takes the form of an irregular polygon (fig. 7), and bears no recognisable resemblance whatever to the typical Roman entrenchment of writers on 'castrametation.' That it represents the handiwork of Roman soldiers is none the less indubitable. The evidence of finds was conclusive.

¹ See *Der Obergermanische-Raetische Limes des Römerreiches*, Nr. 25 (Lief. xiii.).

Again, at Hofheim in the Taunus Professor Ritterling and his colleagues, after ten or twelve seasons of patient investigation, have been able to unravel the history of two first-century Roman forts that lay one within the other.¹ In form (fig. 8) they were much more nearly oval than rectangular. The outer one, only a single entrance of which has so far been located, apparently belongs to the Flavian period. The inner, our knowledge of which is much more detailed, was probably constructed as early as the reign of Caligula. Three of the gates have been identified with certainty (A, B, and C), while strong indications of the position of a fourth have come to light at D. It will be seen that these fall into pairs of opposites in much the same way as do the six at Raedykes. It should be added that, as at Raedykes, the configuration of the ground supplies a ready explanation of all the deviations from the normal.

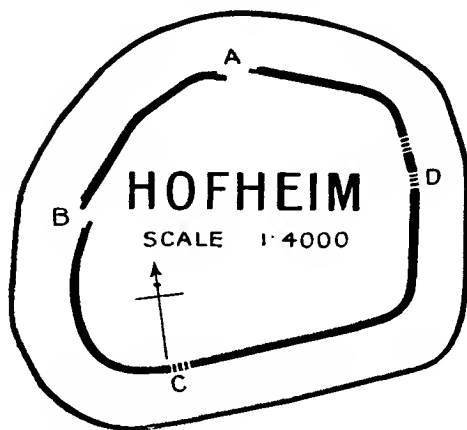


Fig. 8.

Finally, the life of the fort at Waldmössingen in Württemberg has been shown by the Limeskommission to fall into two stages, the last of which came to an end in the earlier half of the second century.² This throws the first stage back at least as far as the Flavian period, when the fort was of earth. Even when it was subsequently rebuilt in stone, it was of strangely irregular shape. Its original outline, however, was much more remarkable (fig. 9).³ Being a permanent station, garrisoned only by a detachment of troops, it was naturally very much smaller than Raedykes, which was meant to hold an army. Otherwise, there is a curious resemblance, extending even to the manner in which the north-east corner is flung forward into the open. This resemblance is none the less significant because it is purely fortuitous, the character of the terrain being in both cases the determining factor.

Fortified by these Continental analogies, the number of which could readily be added to, we need not hesitate to set aside the main objection to the recognition of Raedykes as Roman. And, once that has been disposed of, the conclusion seems fairly obvious, if due weight be attached to

¹ See Ritterling, *op. cit.*

² See *Der Obergermanische-Raetische Limes des Römerreiches*, Nr. 61^b (Lief. vi.).

³ The gates in the earth fort at Waldmössingen have not been satisfactorily traced. But no doubt there were four of them, just as there were in the stone fort that succeeded it.

the considerations that have been already adduced.¹ Beyond the general statement, however, it is not in the meantime possible to go. We have heard that R6y assigned the camp to Agricola; Chalmers was equally confident that its builder was Lollius Urbicus; and others have preferred to regard it as the work of Severus. Each of these dates is possible. But there is no material on which to base a decision between them. It is true that one champion of Severus has appealed to the irregularity of shape as constituting a presumption in favour of his case.² But, if this

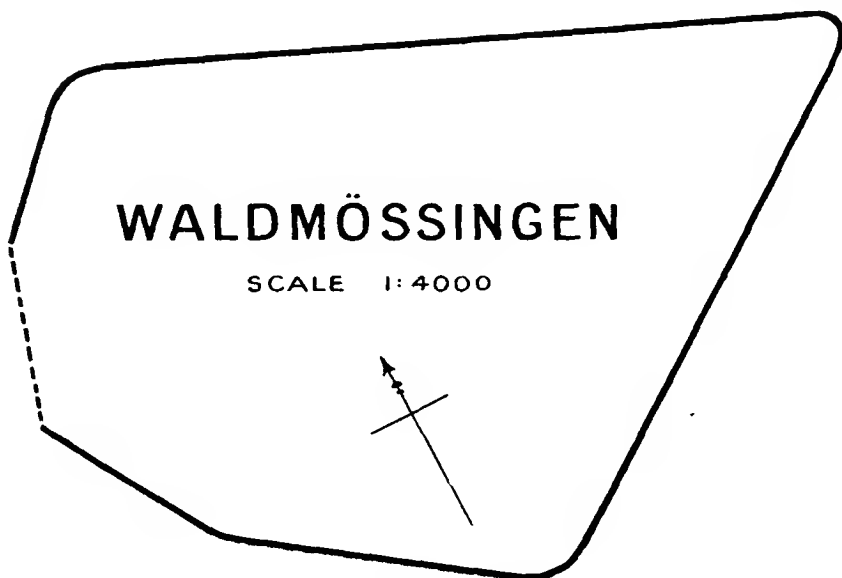


Fig. 9.

particular feature is admitted as evidence at all, it can only be on the side of Agricola, since every one of the four parallels that were cited from abroad belonged to the first century. There we must be content to let the problem rest. Some day, light from an unexpected quarter may show us where to find the key.

II. GLENMAILEN.

The site of this camp, now divided between the farms of Bush and Logie Newton, lies on the fringe of the uplands of Strathbogie, about midway between Huntly on the west and Fyvie on the east. It is a broad, low elevation bounded along the whole of its northern aspect by a deep natural hollow, in the green bottom of which run the infant

¹ See p. 345 *supra*.

² Colonel Shand: see the passage quoted, p. 350 *infra*.

waters of the Ythan; the hamlet of Ythan Wells, named from the springs in which the river has its source, is only a mile and a half away. Its southern slopes command a wide sweep of open country. To the west, however, it is sheltered by a high ridge culminating in the flat rocky top of Tillymorgan, over the shoulder of which peeps the distant peak of Bennachie. The ground between the foot of this ridge and the camp, though now in tillage, is marked on eighteenth-century maps as a morass. From the highest point of the enclosure the descent towards the Ythan is fairly rapid, while beyond the stream, above the farmhouse of Glenmailen or Glenmellan, rise two formidable hills with an open glen between. The strategic significance of the fortified lines is unmistakable. They were constructed by an army which had advanced from the south, and which had still to reckon with a hostile force that might sweep down on it from north or east, and they are so laid out that on these two sides the river with its marshy banks gives effectual protection.

The camp was first observed and surveyed, during the years 1785 and 1786, by Colonel Alexander Shand of Templeland, then a captain in the artillery, who at a later date returned to settle in his native Aberdeenshire after a prolonged and strenuous spell of active service. Joining the ranks as a private, he went through the Seven Years' War, being severely wounded at Korbach. Subsequently he was in America, where he was again wounded at Brandywine River, and finally he distinguished himself highly during the great siege of Gibraltar between 1780 and 1782. A zealous antiquary as well as a practical soldier, he was keenly interested in Roman roads and camps, and devoted much time to their investigation. In 1788 he prepared an account of his researches, including a description of Glenmailen, for the Literary and Antiquarian Society of Perth, which had been founded four years earlier. Contrary to his expectations, his paper was never printed, the first and only volume of the Society's Transactions not being published till nearly forty years had elapsed (1827). In the interval the manuscript seems to have been lost. The last we hear of it is in May 1788, when General Melvill, to whom as a leading authority on the subject it had been sent for perusal, writes Shand a complimentary letter about it, and tells him that, as requested, he has forwarded it to "the Rev^d M^r Whitaker"—that is, no doubt, John Whitaker, the well-known historian of Manchester.¹ In the absence of this authentic record of his activities, we may fall back on a passage in Newte's *Tour* which Shand himself expressly authorises us to accept as accurate, stipulating only that two short phrases are to be omitted. It will be seen that these suggest some measure of indebtedness to Melvill,

¹ Melvill's letter to Shand is reprinted in *Proceedings*, vii. (1866-67), pp. 29 ff. It has a special interest as containing a brief account of Melvill's own discoveries.

which Shand obviously regarded as reflecting on his own originality. The repudiation, however, is made with every mark of old-world courtesy: "the editor having been misled in that assertion concerning an Officer, eminent for his critical knowledge of the Roman classics and Roman British topography."¹ In the following extract the words to which Shand took exception are placed in square brackets.

Referring to Strathmore, Newte says:²—

"The chain of Roman camps in this great Strath was first discovered, as already mentioned, by Lieutenant-General Melvill, in 1754, and afterwards very accurately delineated and described by Major-General Roy. Captain Shand, [from the example, and at the instigation of General Melvill], embraced the opportunity which a four years' residence at Perth, with the command of the Royal Artillery, in North Britain, afforded him, of exploring the Roman geography in Scotland, and comparing the Roman field-works and engineering with what he had seen practised in the German and American wars. By a narrow inspection of Strathallan, Stratherne, and Strathmore, he not only traced, [after General Melvill], the great consular road, with the numerous posts, *presidia* and *castella*, as well as great camps situated on or near it, from Camelon to Kerrymuir in Angus, where the VIA ceases to be discernible: but he, afterwards, discovered a very great number of vicinal or cross roads near the rivers Erne and Tay, and visited the other Roman posts as far as the end of the Grampian Hills near Stonehaven, which had been supposed to have been the remotest point of the country to which the Romans, by land, had penetrated. Conceiving this opinion to be inconsistent with the warlike character, and mighty exertions of the Romans, he likewise, in search of Roman antiquities, explored the Countries of the North-Grampians, and found the great camp at Glen-Mailen on Ythan, perhaps the *statio ad Ithunam*, the very remarkable presidium near Old Meldrum, with a number of smaller works all similar to those on the other side, and having the same kind of character; only some few of them not executed with such nice accuracy: a circumstance which may be owing, perhaps, to their being a century or two later than those of Agricola."

This is the earliest reference to Glenmailen which appeared in print. Apart from the explicit *imprimatur* already alluded to, there is abundant evidence of an internal kind to prove that the whole passage was inspired by Shand. We know, for instance, from other sources that he did not share the views of Melvill and Roy as to the certainty of the Strathmore camps being Agricolan. Again, the allusion to "the very remarkable presidium near Old Meldrum" agrees closely with Shand's own description of "the Castellum on Barra-hill, nigh to Old Meldrum, a station no way inferior in grandeur, or good preservation, to any work of the kind, that at Ardoch excepted."³ Incidentally, it may be explained that the so-called

¹ See the 'Note' by Shand reprinted in *Proceedings*, vii. (1866-67), pp. 27 ff., from which most of the foregoing particulars have been drawn.

² Thomas Newte, *A Tour in England and Scotland* (1791), pp. 301 f.

³ See *Proceedings*, vii. (1866-67), p. 28.

"præsidium" or "castellum" on the Barra Hill is a circular fort surrounded by several concentric ditches; Chalmers is doubtless right in regarding it as a native fort of the same class as the well-known Caterthons.¹ Finally, the allusion to "the *statio ad Ithunam*" points clearly to the influence of one who was a student of 'Richard of Cirencester.'

Precisely the same features can be detected in the "short account of the camp near Glen-mailen, in Sir John Sinclair's Statistical History of Scotland, vol. 12, at pages 287, 288, & 313 to 316," which Shand likewise commends to the attention of "the curious," pending the publication of his own paper by the Perth Society.² The parish ministers of Forgue and Auchterless, the writers of the two notices which he cites, were neighbours of Shand's, and what they have to say upon the subject obviously reflects his conversation. The latter (the Rev. Alexander Rose) gives it much the more generous allowance of space, and one gathers that his observations had been submitted to Shand for his criticism.³ He describes the camp in some detail, and adds a long footnote, the following extract from which may be compared with the passage quoted from Newte:—

"Who were the authors of all the stupendous military works, whether roads or places of defence, scattered over the country, we are no longer at a loss to know. An ingenious and worthy gentleman, a native of the neighbouring parish of Forgue, and who has served as an officer in the Royal corps of Artillery, since the year 1758, was desirous to compare what he had seen during his own time, with what could be still traced in the country, of Roman field fortification, and other topographical marks of their wise military institutions. His situation at Perth, in the duties of his profession, from the year 1785 to the end of 1787, gave him opportunities of spending a great deal of his spare time, in these wished-for researches, which having pursued with unremitting assiduity, he was at last enabled, contrary to an opinion which then prevailed, to demonstrate that the Roman armies had passed the Grampians by land, as well as that they had surrounded the coast-land by their shipping; the character, style, and manner of field fortification, being as evident, and as well supported in the Castellum on Barra-hill, and in the *Castra æstiva* at Glenmailen, as any where between them, and the *prætentura* of *Agricola* extending from Forth to Clyde."⁴

Another extract from the same footnote, with its reference to the *Military Antiquities*, will serve to introduce a new point of interest:—

"The ingenious author (Captain A. S.) of the investigations, just recited, was at first inclined to believe the *Statio ad Ithunam*, was the

¹ *Caledonia*, vol. i. p. 90, with a plan.

² *Proceedings, &c.*

³ The last paragraph of a long footnote begins: "The same ingenious gentleman, to whom the public is indebted for these observations, takes notice that something more should have been introduced about the Roman roads," etc., etc.

⁴ Sinclair's *Statistical Account of Scotland*, xii. p. 314.

work of the Emperor Severus, yet some of the best informed, and learned antiquaries will have it, that all the posts N. of the Grampians were constructed by Lollius Urbicus, the brave and gallant Lieutenant of Antoninus; and the late ingenious Major-General Roy, as soon as he perused the plan of Glenmailen and environs, with its explanation and references, put it down immediately in his *Mappa Britanniae Septentrionalis, Castra Agricolaë*. Therefore, it is to be presumed, it will be published in the next edition of the General's map of Scotland,¹ and that some account of it will be given in the Appendix to his *Posthumous Work*, now probably printing off by the Society of London Antiquaries, to whom one of his manuscripts was bequeathed by latter will, the other remaining in the King's library."²

Vol. xii. of the *Statistical Account* was published in 1794. The footnote just quoted must, however, have been penned at least a year earlier, for Roy's posthumous work was issued by the Society of Antiquaries in 1793. The writer's expectation was only partially realised. On the "*Mappa Britanniae Septentrionalis*," which forms plate I. of the *Military Antiquities*, the position of Glenmailen is duly marked near the headwaters of the Ythan, while plate LI. contains a plan of the enclosure, as well as a section of the rampart and ditch.³ On the other hand, not only is there no "account of it" given, but it is not alluded to in the most distant way either in the text or in the appendixes. The analogy with Raedykes is thus very close. And the parallel extends further. On both plates the Glenmailen camp is actually designated "Re-dykes." It would be interesting to know whether that name was ever really applied to it, or whether we are faced with the result of some confusion. It is true that Chalmers asserts that "the camp at Glenmailen, as well as the camp at Urie, is called the *Rae-dykes*, from the Gaelic *Ra'*, signifying a cleared spot, a fortress."⁴ But this may be based on no better authority than the plates in the *Military Antiquities*. What is certain is that to those eighteenth-century writers who knew the district at first hand—Shand himself and the two parish ministers of the *Statistical Account*—the enclosure was simply "the camp at Glenmailen." Mr Rose, indeed, in his footnote speaks of "the appellations of ri-dikes, and grim-dikes" in a way that suggests that they were used by the country people in connection, not with the camp, but with other earthworks in the district.⁵ Possibly the clue to the nomenclature adopted in the *Military Antiquities* lies in the proximity of the Ri-hill or Re-hill, for which see fig. 10. At all events, that some distrust of it is justifiable is clear from what Shand

¹ The "first edition" of Roy's map was engraved in 1774 (Gough's *British Topography* (1780), ii. 561 and 586). The only copy I know is in the British Museum.

² Sinclair's *Statistical Account*, p. 315.

³ The relevant portion of the plate is here reproduced as fig. 10, on a scale somewhat smaller than the original.

⁴ *Caledonia*, vol. i. p. 127, footnote (g).

⁵ *Statistical Account*, xii. p. 313.

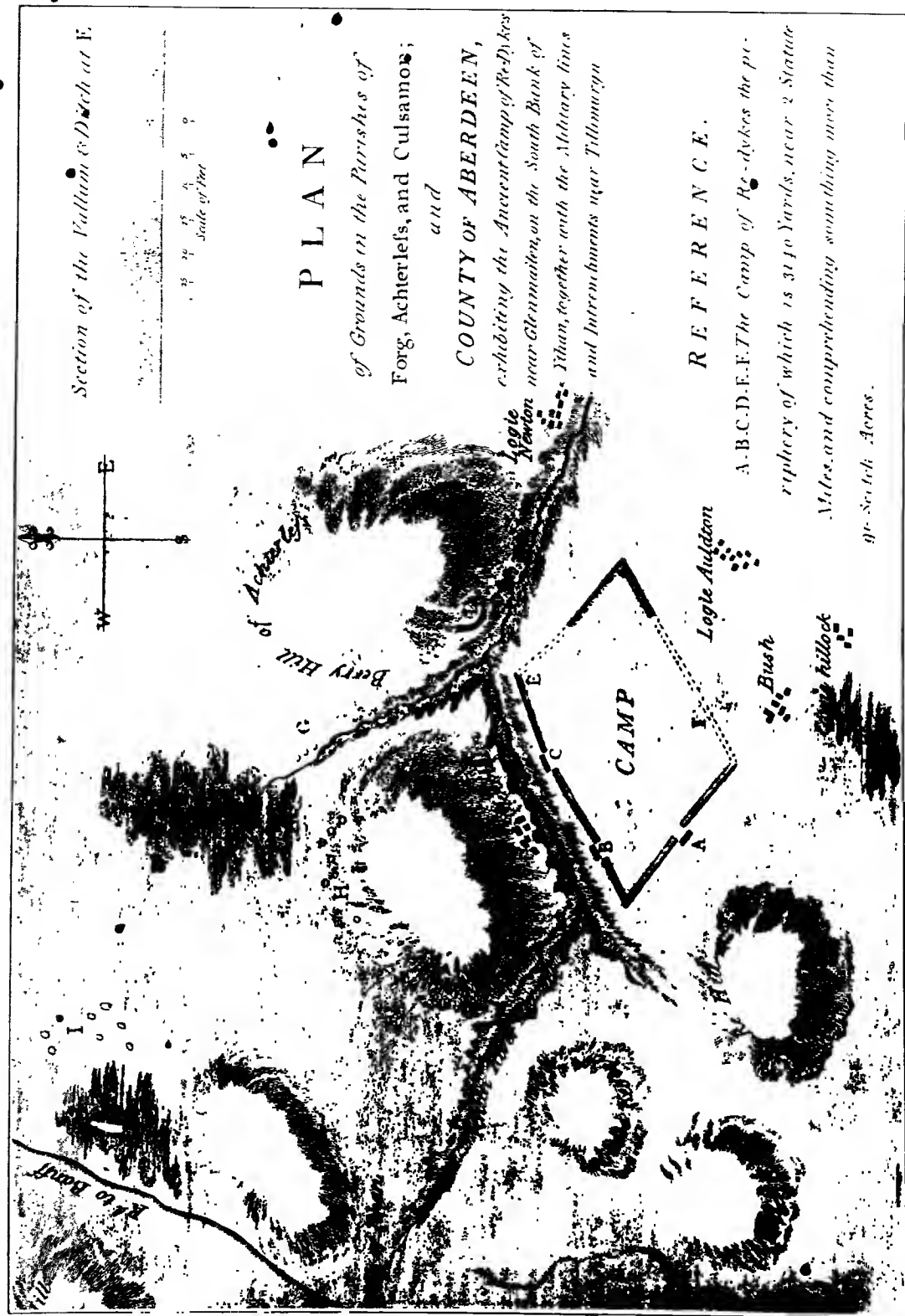


Fig. 10. Plan of Glenmailen, from Roy's Military Antiquities.
 (Scale : 20,000 (roughly).)

says in the 'Note' which has already been quoted more than once. He thus expresses himself regarding the reproduction of his plan in Roy's book:—

"Captain S. did not finish his plan of the ancient military vestiges, on the sources of the Ythan, till some time afterwards, and permitted a good many copies to be taken, and as some of these have been copied from other copies, a few errors have crept in, particularly in the orthography, several of the names of places, and grounds in plate 51, being spelled in such a manner as would make them unintelligible to the country inhabitants."¹

This extract is interesting from another point of view. The phrase "some time afterwards" refers back to "during the years 1785 and 1786," the period when the original discovery and survey of Glenmailen were made. The complete plan was, therefore, probably prepared for the communication made to the Perth Society in 1788 and submitted to General Melvill in the spring of the same year.² Very possibly Melvill may have been the intermediary through whom the plan reached Roy.³ In 1788 the latter was deeply absorbed in the preparation of his final report on the great trigonometrical survey which was to determine the relative positions of the observatory at Greenwich and of that at Paris. This occupied all the energy that ill-health allowed him till his sudden death in July 1790. The plan of Glenmailen was laid aside in anticipation of a time of leisure that was not destined to arrive. Apparently it was not even copied, as that of Raedykes had been; No. LL is the only one of the plates for which there is no original extant, either in the MS. copy of the *Military Antiquities* preserved in the British Museum or in that belonging to the Society of Antiquaries. The owner of the drawing from which the engraver worked—whether Shand himself or another—must have reclaimed it after the book was published.

It will be remembered that, according to the Rev. Mr Rose, "the late ingenious Major-General Roy, as soon as he perused the plan of Glenmailen and environs, put it down immediately in his *Mappa Britanniae Septentrionalis, Castra Agricolaë*." The statement is not literally true. Roy did not insert the camp in his map at all; that was done by his editors. Nor is there, as there was in the case of Raedykes, any direct evidence that he saw in it the hand of Agricola. At the same time there

¹ *Proceedings*, vii. (1866-67), p. 28. It may be added that recent inquiries in the locality have failed to bring to light any evidence that the camp is ever called Re-dykes by the people of the district.

² See p. 349 *supra*.

³ This possibility is in no way inconsistent with the statement of Chalmers (*Caledonia*, vol. i. p. 127, footnote (g)) to the effect that Shand "communicated his discovery first to the antiquarian society at Perth in 1788, and afterwards his survey of it to General Roy."

is no reasonable doubt as to what his view would have been, had he found occasion to express it in writing, for Glenmailen presents all the characteristic features which led him to assign other temporary camps to the Agricola rather than to the Antonine epoch. On the other hand, his editors were more cautious. While they did not hesitate to describe Raedykes as "*Cast. Agricolaë*," they were content to attach to Glenmailen—or Re-dykes, as they called it—the more general description of "*Cast. Rom.*" Either they felt it incumbent on them to be careful, in the absence of any definite authority from Roy, or they considered it impolitic to disregard the opinion of Shand, who was inclined (as we know from Mr Rose's footnote) to attribute Glenmailen to Severus. Thus much for Roy's map. The question of origin is handled even more circumspectly in the explanatory notes which occupy the margin of plate LI, and which doubtless derive ultimately from Shand himself. There the only allusion to the matter is in the description of the three surviving gates, which are said to be "covered with Traverses in the same manner as the Camps which are supposed Roman, on the South side of the Grampian Hills." It would not be easy to imagine anything more definitely non-committal.

Coming to the enclosure itself, we shall find, on reference to fig. 10, that in 1786 enough of the fortifications remained to give a clear idea of the original form of the whole. The camp had been lozenge-shaped in outline, and the motive for this departure from the ordinary rectangular design is self-evident. By planting the northern corner within a bend of the Ythan, and making the interior angle decidedly obtuse, it became possible to secure the river as a protection along the full extent of two sides. For the greater part of this distance—that is, along the north-western front—the defences ran close to the brow of the natural hollow which the stream has carved out as its bed. The distance from the edge of the escarpment is seldom more than 40 or 50 paces. As the water was from 50 to 80 feet below, the obstacle was most formidable. Of the gates, which were apparently six in number, we have already heard. Three of them were visible in Shand's day, together with the traverses that had stood before them. The dimensions of the sides cannot be estimated with any accuracy: the scale of the plan is too small. An explanatory note, however, states that "the periphery . . . is 3140 Yards, near 2 Statute Miles." As the proportion of length to breadth is about 3:2, we shall be fairly safe in assuming an area of 2820 feet \times 1890 feet, or about 122 acres, which agrees reasonably well with the "something more than 90 Scotch acres" of the explanatory note.¹

Later writers make but brief reference to Glenmailen, and from none

¹ The Scotch acre contained 6084 square yards.

of them do we get fresh information of any value. The one fact we do learn is that the process of destruction made rapid headway during the half century that succeeded the publication of the *Military Antiquities*. Thus in 1845 the parish minister reports that "the south and west dikes only are entire."¹ Interpreted by the light of fig. 10, this must mean that only on the south-east and south-west sides were remains of the rampart to be seen in anything like their original condition. It cannot mean that the south-east side was complete, for nearly three-fourths of it had disappeared before Shand's survey was carried out. It implies, however, that the whole of the north-west side, which was in relatively good preservation in 1786, had been ploughed down in the interval. In short, the state of matters in 1845 would seem to have been very much the same as that which prevails to-day, when (as indicated on the Ordnance Survey Map) the rampart is visible for a continuous stretch of about 860 feet at the eastern extremity of the south-east side, and again for a similar stretch of about 950 feet at the western extremity of the south-west side, the curve of the corner at the end being in each case clearly discernible. Further, along certain portions of the north-west and north-east sides it is still possible to recognise the line of the defences, if the condition of the crops be such as to admit of a thorough-going scrutiny.²

The present-day surface-appearances, then, are entirely consistent with the plan as laid down by Shand. At the same time these are admittedly fragmentary, and it therefore seemed desirable to probe the matter further, before accepting Roy's plate LI. as a definite basis for argument. This was the motive immediately underlying the little expedition organised by Professor Haverfield and myself in July 1913. Leave to excavate was readily granted by the proprietor, Mr Garden Duff of Hatton, while Mr Alexander Hay, tenant of the farm of Bush, extended a cordial welcome to the excavators, and saved them both time and trouble by recruiting a band of intelligent and unusually hard-working labourers. Even had the exigencies of the crops allowed, the brief week at our disposal was not long enough to justify any such attempt at a systematic exploration of the outline as was subsequently attempted at Raedykes. As it was, so many of the fields were for the

¹ *New Statistical Account*, vol. xii. (Aberdeen), p. 286.

² For the information as to the north-west and north-east sides I am indebted to Mr J. Graham Callander, Secretary of the Society. Mr Callander, whose experience in connection with the Ancient Monuments Commission lends great weight to his opinion, was good enough to examine the ground very carefully on my behalf in October 1916, after the crops had been cleared away. When Professor Haverfield and I visited the site, access to the fields concerned was unfortunately not practicable. Mr Callander tells me *inter alia* that the markings described as "Earthwork" in field No. 684 of the O.S. 25-in. map (1901), whatever they may represent, are not to be connected with the north-west side of the camp.

moment inaccessible that attention was perforce concentrated on the ground lying towards the western end of the enclosure.

Cuttings made at the northern extremity of the south-western face revealed the character of ditch and rampart. The former, which had had sloping sides, must have been at least 8 or 9 feet wide and at least 4 feet deep. The latter, which must originally have been about 20 feet thick, was constructed of loose earth and stones, laid (as it seemed) on a specially prepared bed of white or yellow clay, some 2 or 3 inches in thickness. Its outer face was practically continuous with the scarp or inner face of the ditch; that is, just as at Raedykes, there had been nothing in the nature of a 'berm.' The whole of these features, except of course the underlying bed of clay, are reflected with tolerable clearness in Shand's section, which is shown in the upper right-hand corner of fig. 10. This, it will be seen, was taken close to the most northerly point of the whole camp, presumably because in 1786 it was there that the conditions for obtaining a record were most favourable. To-day, as we know, that particular portion of the defences has been so thoroughly razed as to be barely discernible. Towards the eastern extremity of the south-eastern side, however, the rampart still stands some 5 to 5½ feet high on the inside and some 7 to 7½ feet high on the outside, while the greatest apparent breadth at the base is about 18 feet. Elsewhere its state of preservation is less satisfactory. Along the south-west face, for instance, the maximum height attained is 4½ to 5 feet on the outside and about a foot less on the inside, while 11 to 12 feet represents the maximum width at the base.¹

The discovery that the rampart had rested on a bed of yellowish clay furnished a guide that was of material assistance in tracing the original line of the defences over ground where no outward mark of their former presence remained visible. This bed is near enough to the surface to be easily reached with the spade; and yet, having escaped serious disturbance when the superstructure was destroyed, it is sufficiently far down to be immune from the ravages of the plough. By its aid, coupled with an occasional clearing-out of the ditch in front, the southern corner and the now vanished rampart at F² were shown to have been correctly laid down on the plan in the *Military Antiquities*. The site of gate A with its traverse was unfortunately covered with growing corn; but, by working along the north-western face from the western corner, the position of gate B was determined and found to agree with that assigned to it by Shand. The gap by which it was located was 70 feet wide. At the normal distance before it, digging brought to light the ditch of the traverse, immediately in the rear of which was the

¹ I am indebted to Mr Callander for verifying these particulars.

² See fig. 10.

bed of yellow clay that had formed a foundation for the protecting mound. In a word, wherever its accuracy was tested, Roy's illustration stood the ordeal in a manner which justifies us in accepting it as a reliable representation of the camp as it appeared in 1786. This gives us three gates with traverses, and from these, as will be evident from a glance at the plan, a total of six may quite safely be inferred.

The clearing of the very first section of ditch and rampart left on the minds of the excavators a distinct impression that they were face to face with the work of Roman engineers, and as the work proceeded the impression rapidly became a certainty. The form and design of the whole, the arrangement of the gates, the slope of the ditch, the extensive use of clay, the presence of the traverses—all these are characteristic. The camp at Glenmailen may confidently be set down as a memorial of the largest Roman army that ever penetrated to the remoter portions of our island. It must, of course, have been a field force, and the period of its stay would necessarily be brief. Hence the absence of relics. The ditch was thoroughly examined at several points, notably near gate *B* and at the adjacent corner, and the black matter from the bottom carefully scanned; but no coin, no fragment of pottery, emerged to reward the diligence of the searchers by giving them a datable clue. The sum of the finds was made up of a single piece of iron, which was lying fairly high up, and which may or may not be Roman, a few broken twigs of ancient forest trees, and two or three masses of rust which possibly represented corroded spear-heads. Exploratory trenches cut as near the centre of the camp as was practicable proved equally unfruitful. That they did not reveal any trace of buildings is scarcely surprising. Officers and soldiers alike would be quartered in tents. We are thus left in doubt as to the precise epoch to which the entrenchment belongs. Here, as at Raedykes, we must wait for further light. The present position has been excellently stated by Professor Haverfield:—¹

"The general result is a plan which is a Roman plan and which includes at least one gate in a style used only by the Romans. One may therefore welcome the encampment as Roman, and may further deduce, from the absence of small finds and from the exceedingly wide gates and the rather slender defences, that the occupation was very short; it was, in fact, the 'marching camp' of an army of 10,000 or 15,000 men, abiding for only a few nights. Some day, further digging may tell us the date of the work within the Roman period.

¹ "Roman Britain in 1913" (*British Academy Supplemental Papers*, ii.), pp. 8 f. In the foregoing I have drawn to some extent upon this report by Professor Haverfield, and, still more freely, upon an article of my own, published in the *Scotsman* of August 2, 1913.

The choice must lie between Agricola about A.D. 83 and Septimius Severus about A.D. 209. *A priori*, it may seem likely enough that Agricola got as far north as the Ythan and that Severus did not, but only actual finds can decide. I will, for the present, add one warning. The site of our camp agrees ill with the description of the battle of Mons Graupius in the 'Agricola' of Tacitus, except on the assumption that the Romans that day faced south, and that the Ythan guarded their rear. No battle in the least resembling that sketched by Tacitus could have been fought here with the Roman front resting on the river."

POSTSCRIPT.

On p. 340 *supra* reference is made to the surprisingly accurate manner in which one of the most obscure sections of the outline of Raedykes has been reconstructed on the Ordnance Survey Map. Through the courtesy of the Director-General I have now been able to consult the 'Name-book' for the parish of Fetteresso. This shows that the survey was made in August 1864, and that its relative accuracy is entirely due to the great care and thoroughness with which the responsible officer (Corporal Render, R.E.) performed his task. He reports that "General Roy's plan is pretty good on the North, East, and West sides, but very much in error on the South side," and that, where both rampart and ditch had disappeared, his own conclusions were based on a close study of the undulations of the ground, fortified by "the assistance of the adjoining tenants who levelled those portions during the process of cultivation." In regard to the position of gate *E*, with its traverse, he simply follows Roy, or rather Brown.

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